

Southern California Airport Exploratory Study 2.0

Tri-County Region:

Orange County
Riverside County
San Diego County

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EXECUTIVE SUMMARY

The 2013 Exploratory Airport Study (EAS), conducted by the California State University San Marcos MBA Cohort Class of 2014, concluded that San Diego International Airport will be incapable of handling the region's air travel needs beyond 2035. San Diego International Airport (SAN) currently offers few options for international travel due to its short runway and limited space of expansion. The study evaluated three potential locations for a new airport within San Diego County. It concluded that the only feasible location for a new international airport within the county would be located on or near the southern edge of Camp Pendleton in Oceanside. A new airport would require somewhere between 5,000-6,000 acres along the southern edge of the military base. This represents less than 5% of 125,000 acres that Camp Pendleton occupies.

The 2014 Exploratory Airport Study (EAS), conducted by the California State University San Marcos MBA Cohort Class of 2015 picks up where the previous one left off. It explores the regional implications of an international airport in Oceanside, California. Specifically, this report expands the definition of the airport's reach beyond San Diego County to include Southwest Riverside and Southern Orange Counties adjacent to the proposed Camp Pendleton Oceanside location. For the purposes of this study, this region is referred to as the Tri-County region and the proposed airport is called the Southern California International Airport (SCIA). In effect, the current study completely reframes the conversation from the long-discussed debate over where a new San Diego Airport might be located, to a focus on building an airport to serve the needs of all of Southern California. The region served by the proposed SCIA will stretch from Los Angeles California to Tijuana, Mexico.

Chapter 1 defines the Tri-County region in terms of its driving distance from the proposed airport site. Residents of Tri-County – as well as all San Diego County residents – are underserved compared to national averages in terms of reasonable access to a large international airport. International travelers wishing to reach San Diego, and San Diegans wishing to travel internationally, are forced to connect through LAX or other major international airports. Furthermore, the Tri-County population is projected to reach 2.7 million – almost as large as the current San Diego County population – over the next 25 years. A new international airport located in the Tri-County region would provide much-needed access to international travel for these residents, as well as convenient access for

international business and leisure travelers to the region. This also provides access to cross-border travelers who currently commute from Tijuana to LAX

The Tri-County region is home to an ethnically diverse, well educated, and relatively affluent population. In general, residents are representative of today's flying public. In fact, they are more likely to travel internationally than the U.S. population, yet they have limited access to international travel options in the immediate region. Camp Pendleton is home to 40,000 military personnel and their families, who would also benefit greatly from having an international airport to serve their non-duty air travel needs. The region is also home to some of Southern California's most iconic tourist attractions. In order to estimate the size of an international airport in Southern California, the Chapter 2 begins by investigating the size and capacity of its existing and planned airport infrastructure including Los Angeles International Airport (LAX), Long Beach (LGB), John Wayne (SNA), Ontario (ONT), San Diego International (SAN), and McClellan-Palomar (CLD). Studies show that that by 2040, these existing airports will be insufficient to meet the demands of the flying public even after planned improvements are completed. They will fall short of demand by an estimated 30-40 million enplanements. This is approximately the same number currently served by San Francisco International Airport (SFO).

The second part of Chapter 2 benchmarks the Tri-County and San Diego regions against other major metropolitan areas served by major international airports. These include New York City, served by JFK, LaGuardia, and Newark airports; Chicago, served by O'Hare and Midway airports; San Francisco, served by SFO and Oakland airports; and Dallas, served by Dallas-Fort Worth and Love Field airports. The analysis highlights that each of these areas is served by a single major international airport (two, in the case of New York City) as well as a large airport handling primarily domestic flights. Currently, more than 98 percent of flights into and out of SAN are domestic. With such a short runway and no room to expand, SAN (the primary airport for San Diego) cannot accommodate international traffic. The benchmarking study demonstrates that SAN can and should remain a vital domestic gateway, much like Midway, Oakland, and LaGuardia; SCIA in Oceanside, within just a 45-60 minute drive for the majority of the region's population, will be able to accommodate international travel.

Commuting to and from LAX over long stretches of freeway only exacerbates the region's travel and environmental problems. The proposed location of SCIA is conveniently situated in Oceanside, California, which is a connecting point for currently underutilized public transit systems from throughout the region. Chapter 3 investigates planned

improvements in the public and private transportation infrastructures that will be needed to offer efficient, environmentally friendly, and sustainable access to the airport. The analysis indicates that current and future plans for transportation infrastructure should be able to accommodate the ground transportation needs of a major international airport.

Building a major airport is a capital, labor, and time-intensive project. The recent expansion of SAN took four years, while the construction of the Denver International Airport, America's newest, took six years. However, such timeframes are for construction only and do not include additional time required for obtaining government and voter approvals, bidding, or design. Chapter 4 estimates the regional economic impacts of building and operating a major international airport in the Tri-County region. Benchmark analysis against recent projects indicates that during construction phase, the proposed airport will employ as many as 11,000 construction workers, many of whom will relocate to North San Diego County. Once opened and fully operational, the airport will attract more hospitality, transport and warehousing business to the region. By conservative estimates, the new airport will bring between 100,000 and 200,000 new offsite jobs to the region. This is comparable to the 189,000 new offsite jobs created by the new Denver Airport. By the time SCIA begins operations, new workers could potentially infuse an additional \$3 billion to \$7 billion into the local economy.

The need for a new international airport is clear. Current and planned infrastructure in Southern California will soon be insufficient to meet the air travel needs of the flying public. These travelers also vote and live within the region. Thus, the political influences and implications on the decision to build the airport require both time and careful consideration. Chapter 5 addresses these concerns. There are many stakeholders who will have a voice in whether or not this project can be launched. Such a project would require agreement among stakeholders including the U.S. Military at Camp Pendleton, San Diego County voters, local businesses and communities, and many regional and national government agencies. A series of in-depth interviews elicited the concerns and interests from representatives of these parties. They are included and discussed in the report.

Political and personal concerns and opposition aside, all stakeholders interviewed agree that a new international airport would provide tremendous benefits to the region. These benefits include increased air travel, tourism, and business and community development. Nonetheless, there are a number of legitimate concerns and drawbacks that will need to be addressed and surmounted. The military represents nearly one-third of the economy of San Diego County. They have been and will remain a vital part of the life of the

Tri-County Region. Thus, any discussions concerning the new airport on or near Camp Pendleton must not only address military concerns, but must seek to enlist the military as active partners and beneficiaries of the new facility. The report ends with a series of recommendations for building upon existing relationships and cooperative efforts among leaders throughout the Tri-County region. If properly executed, these recommendations will help make the concept of Southern California International Airport a reality.

CHAPTER 1: TRI-COUNTY REGION

Introduction

The 2013 California State University San Marcos (CSUSM) MBA Airport Exploratory Study 1.0 (EAS 2013) concluded that the site for an additional international airport in San Diego is best located at MCAS Camp Pendleton in Oceanside. While the recommended site for the proposed Southern California International Airport (SCIA) is in North San Diego County, it is also adjacent to South Orange and Southwest Riverside counties. A new airport located at this site will be positioned to serve these three counties. Therefore, it becomes necessary to define and describe this Tri-County region.

The Tri-County region can be defined on a variety of dimensions, including



Figure 1.1: Tri-county geographic boundaries.

population demographics, regional trends, and growth patterns. Defining the region's geographic boundary will provide a focus for the 2014 CSUSM MBA Airport Exploratory Study 2.0 of the proposed airport site. The respective government agencies and associations have defined geographic boundaries within each of the three counties for various purposes. For example, Orange County and San Diego County can be divided

into north and south sub-regions. Population clusters, particularly in the western portion Riverside County can be used to describe regions within it. The Tri-County region as a whole will be defined as the area made up of a combination of these established regions from within each county. Therefore, the Tri-County region for the purpose of this study comprises North San Diego, South Orange, and Southwest Riverside counties as illustrated in Figure 1.1.

The proposed international airport will attract travelers within a reasonable distance from the Camp Pendleton site. This distance, or estimated reach, can be defined by factors such as drive times or areas with underserved air travel needs. It is important to evaluate and compare the current and average drive times throughout the United States and

in the Tri-County region to determine the expected reach of an additional international airport serving the region. This chapter of the 2014 study explores those possibilities.

In addition to defining a geographic distance surrounding the proposed airport, a demographic profile of the area is valuable in describing the Tri-County region. The three counties have experienced different patterns of noteworthy population growth in the past few decades, and specific demographic groups have been projected for continued growth into the future. San Diego demographics and growth were explored by the EAS 2013. Given a new focus on the Tri-County region, this study will expand the demographic research to include South Orange and Southwest Riverside counties.

Research Questions

The following research questions will be addressed:

1. What specific geographic boundaries in North San Diego, South Orange, and Southwest Riverside counties define the Tri-County region?
2. What demographic data provide comparison to the air travel needs of the Tri-County region?
3. How does the history and projected growth of each county describe the Tri-County region?
4. How will the proposed airport serve the projected demographic makeup of the Tri-County region?

Scope and Limitations

While this document aims to capture current and all-inclusive data in examining the Tri-County region, limitations occur based on the availability, transparency, and comparability of data. For example, U.S. Census data is available in ten-year increments with the most recent data set compiled in 2010. This poses a challenge of accounting for the most up-to-date demographic data for 2014 as well as syncing sources other than U.S. Census data in analyzing trends. Similarly, ESRI Business Analyst Online (BAO) data supports current municipal and governmental data sets, which are not always available for analyzing prior years but rather group historical data into multi-year data sets to demonstrate past trends. The California Department of Finance (DOF) projects population and demographics for fifty years into the future. However, DOF presents the race/ethnicity demographic differently than ESRI BAO. A table of the demographic data from both sources is included in

the appendix. Analysis of the U.S. Census source data was used to reconcile the categorical differences.

When looking towards the future, projected forecasts represent an educated prediction, which may or may not be accurate as future untold events might significantly impact population and demographic trends. To account for these issues, the team used a trusted and accurate predictor through the use of DOF projections. Additionally, further research is needed on the Millennial generation, as this group will be the future air travelers of 2040. Current research suggests that there are many differences in terms of values, communication, and technology among the millennial consumers compared to their predecessors from Generation X and the Baby Boomer generations. In order to successfully understand and tap into the needs and behaviors of this emerging generation, further generational research is needed.

Methodology

The proposed airport will be situated near the Camp Pendleton Marine Corps Base, located at the nexus of three counties: San Diego, Orange, and Riverside. County governments have well-defined boundaries of sub-regions within each. However, the Tri-County region that this study considers has not been officially defined by any of the three counties. This study proposes definitions for the region along a number of dimensions using information from various governmental councils such as the Southern California Association of Governments (SCAG) and San Diego Association of Governments (SANDAG). SCAG and SANDAG create comprehensive plans to implement state and federal mandates for transportation, land use, housing needs assessments, air quality, and community sustainability for regional growth. These government associations provide information for defining sub-regions within the area under study.

This study relies on analysis of secondary data sources, including data retrieved from these governmental councils, from the EAS 2013, and regional Geographical Information Systems (GIS). GIS is used to capture, store, analyze, manage, and display many types of geographical data including demographics captured by the U.S. Census Bureau. CSUSM uses ESRI for geographical data studies. ESRI Community and Business Analyst modules create GIS data maps through the compilation of county and municipal data sets from zip codes, census tracts, and block groups, providing a comprehensive and consistent view of the region. Figures 1.1, 1.2, 1.3, and 1.4 were created with the ESRI Business Analyst Software. To maximize the benefits provided by the GIS resources, the team worked closely

with CSUSM GIS subject matter expert, Allen Risley, to establish consistent boundaries that provide uniform data sets captured and compared throughout the analysis.

For the purpose of depicting growth trends, and to accurately display the landscape of the Tri-County region at the estimated time of the proposed airport's completion, the team prepared forecasts to demonstrate the projected growing and changing demographics of the region. The team used existing forecast data from DOF rather than performing trend analysis of current and past populations. Trend analysis for growth is an inaccurate process and can lead to distorted figures. A government-planning agency such as the DOF provides the most reliable predictions for regional growth. Whereas U.S. Census data underlies DOF data, census data was used to understand and reconcile with ESRI BAO demographic data.

Secondary resources also provided the data used to map the geographic reach of the airport. The data were accessed through comparative airport studies and marketing analysis reports to objectively determine the target market for air travel to and from the proposed airport. This defined target market was compared with the region's demographics and growth trends to determine the proposed airport's realistic regional scope and reach. Additionally, the current and average distances of international and domestic air travelers to their closest airports throughout the United States were used as benchmarks and considered when defining this reach.

Defining the Geographic Reach

In order to discuss the impact of an international airport located in North San Diego County, the geographic reach of this airport must be defined and measured. The first step in this process benchmarked the population density and proximity to major airports across the United States and California. The geographic reach of LAX, the closest major international airport to the proposed airport, served as the primary point of such comparisons. As the largest airport in California, LAX serves a sprawling metropolitan area similar in size to the Tri-County region, and the driving habits of its customers will likely resemble those of the proposed airport future customers making it an ideal model for comparison. Lastly, the underserved areas in the Tri-County region, those beyond the reach of the existing airports whose residents may travel further due to limited air travel options, were evaluated.

Airport Proximity

Currently, 90% of the United States population lives within 58 miles of a major airport while 90% of Californians live within 43 miles (Pearson, M., 2012). However, to create a measurement more meaningful to Southern California residents, distances will be considered in drive times. Therefore, 90% of Americans live within a 60-minute drive of a major airport and 90% of Californians live within a 45-minute drive. Further examination of the population densities in close proximity to major airports demonstrates that the average American lives within 25 miles and 30 minutes, while Californians live within 13 miles and 15 minutes (Pearson, M., 2012).

An examination of LAX departing passengers reveals that 77% originate from Los Angeles County. More than 60% of its travelers originate within a 30-mile radius, with the most common areas of origin being Western Los Angeles and Anaheim. A minority of LAX passengers comes from the surrounding counties, with 13% and 1.5% originating from Orange and Riverside, respectively (AMPG, 2007). Although the majority of passengers come from a relatively small radius around LAX, the international hub of Southern California draws passengers traveling up to approximately two hours away.

The percentage of the California population that does not live within an average drive time of 45-minutes will be categorized as residing in an “underserved area.” ESRI was used to estimate the portion of the Tri-County region that would be considered underserved. This exercise identified any sub-regional areas that are not included within

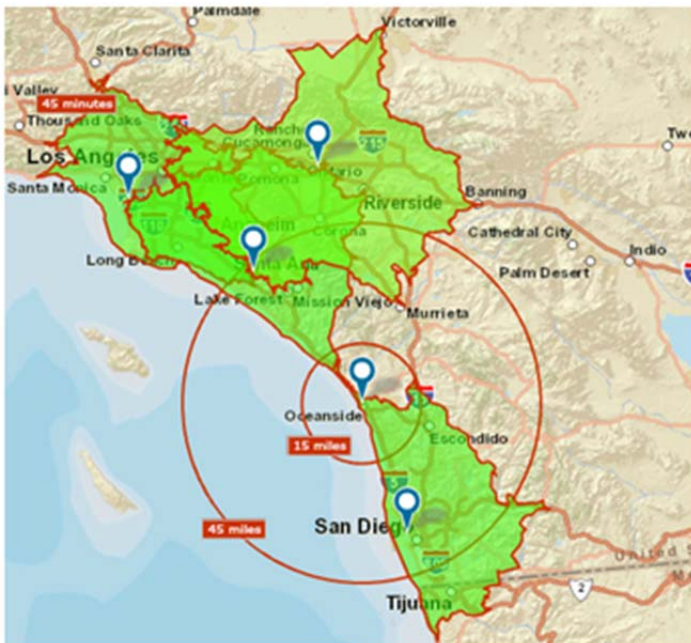


Figure 1.2: Airport Reach in Southern California.

the average drive time from an airport, indicating these residents may drive farther to travel by air and would therefore expand the geographic reach of the proposed airport. To capture both the international and domestic needs of air travelers, each type of travel option is evaluated independently.

Four Southern California airports provide access for domestic travel: LAX, John Wayne

(SNA), Ontario (ONT), and SAN. While there are additional limited-offering airports in the region, only the four major regional airports will be evaluated for the purpose of this research. Using Business Analyst mapping tools, a 45-minute drive time analysis was applied to these four airports. Additionally, the proposed airport location is plotted with a 45-mile radius ring. As displayed in Figure 1.2, the areas within the boundary and not highlighted, mostly composed of Riverside County, can be considered underserved for domestic air travel.

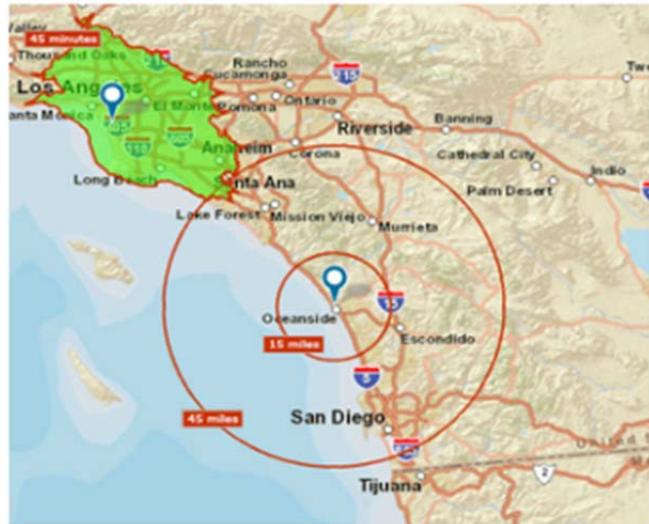


Figure 1.3: LAX service area and underserved area.

A similar method was used to examine international airport services in the region. While ONT and SAN are technically international airports, the number of international flights offered is extremely limited. Therefore, LAX is the only major international airport considered for this analysis. As displayed below in Figure 1., a 45-minute drive time boundary was plotted around LAX with a 45-mile ring around the proposed airport site in North San Diego County. The result shows that all of San Diego County and Riverside County, as well as the southern half of Orange County, are underserved for international air travel.

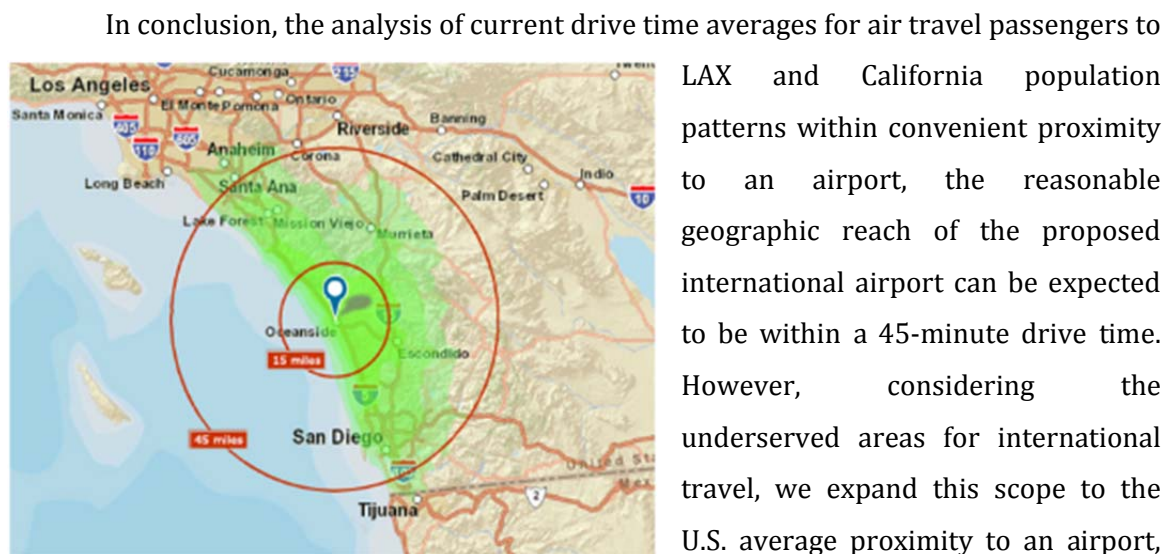


Figure 1.4: Drive time reach of the proposed airport.

In conclusion, the analysis of current drive time averages for air travel passengers to LAX and California population patterns within convenient proximity to an airport, the reasonable geographic reach of the proposed international airport can be expected to be within a 45-minute drive time. However, considering the underserved areas for international travel, we expand this scope to the U.S. average proximity to an airport,

and therefore conclude the reach of the proposed airport will likely be limited between a 45 to 60-minute drive time, as displayed by the green shading in Figure 1. below.

Describing the Tri-County Region

San Diego County

As described in the EAS 2013, San Diego County is composed of a mixture of both urban and rural landscape with a notable military presence. San Diego County is the second most populated county in California and the fifth largest county in the United States, encompassing 4,300 square miles, comparable to the size of Connecticut (“San Diego County Geography,” 2014). According to the San Diego History Center (2013), San Diego County reached its population boom at the end of the nineteenth century after the Transcontinental Railroad reached San Diego, providing a means of transportation for inhabitants to establish residential and industrial roots. The county has experienced population growth and is expected to steadily continue, according to the California Department of Finance population projections (2014).

As reported in the 2010 Census Report, San Diego County has a total of 3.1 million residents. By 2040, the Department of Finance projects that the population in San Diego County will grow by 16.7% to reach 3.7 million residents. Currently, SAN, a single-runway airport limited by geographical and logistical challenges, serves San Diego County air travel. In 2013 SAN completed a terminal expansion, adding 10 new gates to existing infrastructure. While this terminal expansion has added temporary capacity to SAN, it has not addressed the geographical or logistical constraints posed by a single runway. As demonstrated by the San Diego County Regional Airport Authority (2006), current estimates suggest that by the year 2035 SAN will reach maximum capacity and will no longer be able to meet the growing air traffic demand of the region, placing major economic strains on the region.

SANDAG (2014) clearly defines the regional boundaries of North County West and North County East. This study combines these two sub-regions to identify and outline the North San Diego County boundary. This area includes both coastal and inland regions, including nine incorporated cities. SANDAG’s boundaries are defined according to major statistical areas as outlined by the U.S. Census. SANDAG relies on these boundaries because they are considered constant and will provide an accurate time series analysis while looking at both historical and projected trends of the region.

As recommended by the EAS 2013, the proposed international airport site is best suited at MCAS Camp Pendleton in Oceanside, California. Currently domestic travel to North County residents is provided by Oceanside Municipal Airport and Palomar McLellan Airport in addition to SAN. More importantly, locating an international airport at the proposed North County location site will provide for access to an international airport within 60 miles (and within a one-hour drive) of the majority of the population of all of San Diego County.

Furthermore, strategically locating an international airport centrally in North San Diego County will serve the needs of the flying public beyond the boundaries of San Diego County. The Tri-County region defined in this study encompasses an area within a 60-minute drive time to the airport. While the majority of the San Diego population lives within a 60-minute drive to the south and east of the proposed airport site, those living within a one-hour drive to the north and northeast are residents of Orange and the underserved population of Southwest Riverside counties – two areas with fast growing populations. Historically the Tri-County region has had to choose between LAX or SAN to access international air travel. When examining the drive times around these international airports, the Tri-County region is currently underserved, providing a unique opportunity to provide a new service to the region, as previously demonstrated in Figures 1.3 and 1.4.

Orange County

Orange County is located immediately north of San Diego County on the Pacific Coast. Los Angeles County borders Orange County to the north and San Bernardino and Riverside counties to the east. Spanning just 791 square miles, the county is the second most densely populated in California with about 3 million residents in 2010 (United States Census Bureau).

Los Angeles County included what is now Orange County in 1850 when California was ceded to the United States. Economic growth and local residents' pride led to the formation of Orange County in 1889 (OCHA, 2014). During that period, economic growth was dependent on the rich agricultural land that sustained cattle ranching and many crops including oranges. The expansion of the railroad and development of Newport Bay commercial shipping port led to an increase in trade outside of the county and an influx of settlers into the county. Existing communities expanded and new towns were established. The growth of the demand for citrus was served by hundreds of individual farmers rather than big companies, which initiated the accumulation of wealth that is recognized in Orange County today.

Southern California experienced high levels of population growth during World War II when several newly established military bases trained thousands of service members. The biggest population growth boom occurred in Orange County after the war. Vietnam refugees landed in El Toro Marine Corps Air Station and settled in the area along with many returning service members and their families (OCHA, 2014). Tourism, manufacturing, and the service industry began to dominate the local economy. Following Knott's Berry Farm, Disneyland opened in 1955 making Orange County an international tourist destination. The Anaheim Resort District encompasses Disneyland and the Anaheim Convention Center, which opened in 1967 and is currently the largest exhibit facility on the West Coast (ACC, 2014). Tourists and business travelers within North America often arrive and depart from the Orange County John Wayne Airport (SNA) situated on 500 acres served by a single 5,700-foot commercial runway (OCAIR, 2014).

The South Orange County region can be defined as the geographic area stretching south from the 55 Freeway to the county's southern border with San Diego County. This boundary line divides the county along a southwest-northeast diagonal. Considering the international travel coverage area described above, only the northern portion of South Orange County is within LAX reach. SNA is in close proximity for domestic travel. However, the southern portion is in the underserved area for international travel. The population trends of the cities to the north and south of the 55 Freeway also justify this boundary line. Population growth rates by jurisdiction, as shown on the Center for Demographic Research map below (Figure 1.3), are drastically different for cities to the north and south. The cities of Newport Beach and Irvine, immediately south of this boundary, have had extensive population growth in the past decade while the cities of Costa Mesa and Santa Ana to the immediate north of the 55 freeway have experienced much slower or negative growth (CDR, 2014).

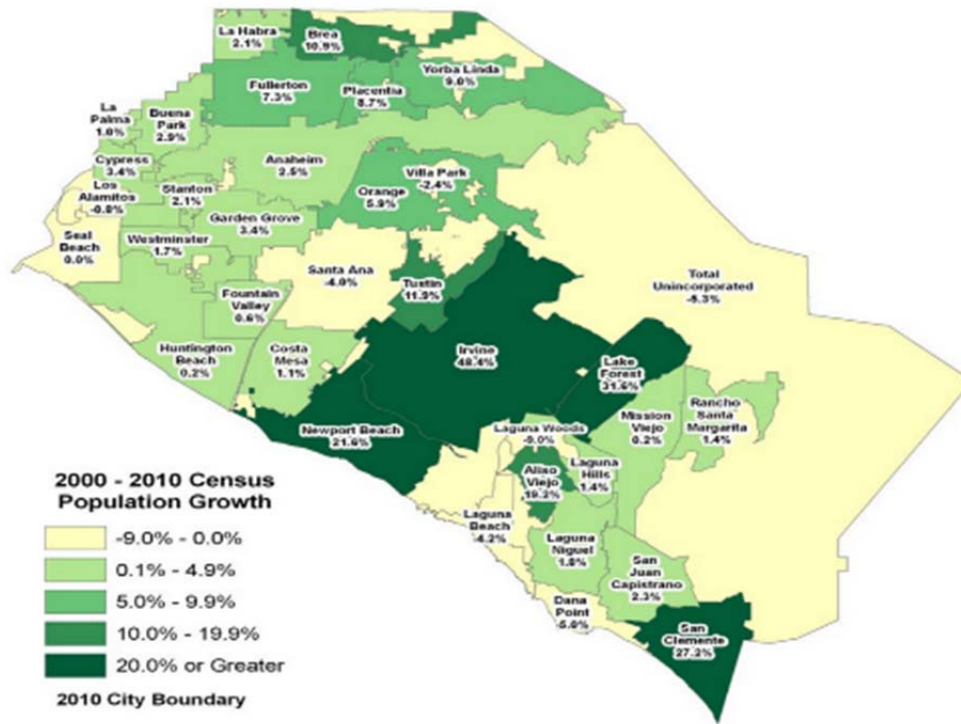


Figure 1.3: Orange County Population Change by Jurisdiction

The opening of the proposed airport would imply that the entire growing population of southern Orange County would live within a 45-minute drive time of an international airport. With LAX serving the slower growing population of the northern region of Orange County and the proposed international Tri-County airport to the south, the entire population of Orange County will have access to international travel service.

Riverside County

Riverside County is the fourth largest county in California in terms of geographic area. This county encompasses the eastern portion of the Tri-County region as it borders northeast San Diego County and southeast Orange County. During the 1980's and 1990's, Riverside was the fastest-growing county in California with a 76% growth in population. Since 1992, the population of Riverside County has doubled. Its population is more than the populations of thirteen states, including Maine, Hawaii and New Hampshire.

Recently, growth has slowed, bringing the population growth rate back in line with the state of California's average rate. The air travel needs of Riverside County residents are currently served mainly by Ontario International Airport, a medium-hub, full-service commercial airport that served 4.8 million passengers in 2010. Although this airport has

sufficient runway length for international flights, it is limited by small customs facilities and options for connecting flights. A few major corporations that employ a vast amount of Riverside residents include Pacific Bell, AT&T, Kaiser Permanente, The Press Enterprise Co., HUB International Insurance Services, Inc., Abbott Laboratories, University of California Riverside, and the Millipore Corporation. In addition to these companies, numerous wineries located in the city of Temecula have helped fuel additional job and revenue growth for the county.

The drive time analysis was used in conjunction with U.S. Census blocks to establish the boundary defining the Southwest Riverside region. Census blocks for this region were selected based on if they were either fully within the 60-minute drive time area or if the majority of the block fell within this area. The defined region naturally follows closely with the I-15 corridor as drive times are heavily influenced by freeway access. Furthermore, the use of this demographic segmentation is consistent with SANDAG's geographic definition of Southwestern Riverside.

Southwest Riverside is located in close proximity to the I-15 corridor, a major transportation artery connecting Riverside to San Diego County. A recent SANDAG (2014) transportation survey suggests, "95% of persons commuting into the San Diego region were from the southwestern Riverside County area." One explanation for the transportation patterns between the two areas includes the creation of 23% more jobs in San Diego leading up to the year 2000, while housing units disproportionately grew by less than 10%. Housing prices in Riverside County are comparably less than equivalent options in San Diego County, making the commute to San Diego County an attractive option for employment opportunities. Further studies estimate that 29,000 residents of southwest Riverside commute into the San Diego region and about half have been doing so for the past five years. Of the interregional commuters travelling into San Diego County, over 40% are commuting to jobs in north San Diego County. On average, interregional commuters travel 52 miles for employment, spending 60 minutes traveling to work and 72 minutes commuting home.

Current Average Air Traveler

Before describing the current and projected demographic makeup for the Tri-County region, it is necessary to understand and define the current average air traveler. This will establish the demographic measures that represent current air travel as well as

the demographic profile of air travelers. The definition of an average air traveler will create a benchmark for comparison to the demographics of the Tri-County region.

Airlines collect and analyze many data sets pertaining to air travelers and use the findings for target marketing, such as advertising space at airports. In addition, some marketing research agencies specialize in profiling airport consumers. JCDecaux is one such agency that has conducted market research on 24 airports within the United States. The agency has developed a demographic profile of the typical airport consumer at each airport. This study relied on the information provided by JCDecaux for a comprehensive overview of American air travelers within the United States. Of the available airport profiles from JCDecaux, the team focused on travels through LAX, New York's John F. Kennedy (JFK), Dallas Fort Worth (DAL), and Chicago O'Hare (ORD) as comparison airports. Each of these airports provides international travel to and from major metropolitan areas served by multiple airports. The main demographic categories compared were age, race, education, household income, and frequency of travel. Average findings within the target airports are displayed in Table 1.1 below (JCDecaux). Because there is not an "average" race, the findings from this category will be discussed in the section below.

Airport	Avg Age	Avg HHI	College Grad Index	% Traveled By Air / 12 mo
LAX	44	\$ 94,301	151	46%
JFK	44	\$ 105,778	132	49%
DAL	44	\$ 93,387	127	47%
ORD	44	\$ 106,607	147	48%
Average	44	\$ 100,018	139	48%

Table 1.1: Demographic profile of air travelers.

Age

A consistent finding among the four airports is that the average traveler is 44 years old. The supporting data demonstrates that the ages are normally distributed with a mean of 44 years, indicating that the very young and the very old are the smallest represented air travel passengers.

Average Household Income

The measurement used by JCDecaux to represent wealth of the average air traveler is average household income (HHI). The average HHI for the four sample airports is \$100,018 with relatively low deviations. Considering the high cost of airfares, it is reasonable to expect a higher HHI would be positively associated with more frequent air travel.

Education

Educational attainment of a college degree is represented by an index, indicating how the average air traveler at each airport measures against the average American citizen. With an average index of 139, an air traveler is 39% more likely to have a college education than the average American citizen. This measure is also most likely associated with higher HHI, which, again, is reasonable to assume a positive relationship to more frequent air travel.

Frequency of Travel

To describe the market penetration and reach of the collected data, JCDecaux provided a percentage of adults in each Designated Market Area (DMA) who traveled by air in the past year. This statistic provides a description of air travelers rather than a definition.

With data of this described air traveler, a benchmark is established for comparing the Tri-County region's travel patterns. The findings for each of the DMA's of the four selected airports are that on average 48% of adults have traveled by air in the past year.

Race

The percentage distribution of air travelers by race from the selected airports provides the most variation, likely due to regional differences in racial and ethnic diversity. For example, Hispanics represent the second largest air traveling group, as 31% of the travelers at LAX, yet only 11% of the travelers at DAL. The largest percentage of travelers at all four sample airports is White with LAX having the lowest at 47% and both DAL and ORD having the highest at 64%.

Summary

Using LAX, JFK, ORD and DAL as comparative airports that best represent the current demographic makeup of the Tri-County region, it can be concluded that the average air traveler is middle aged, white, college educated, and is part of a moderately high earning household.

Tri-County Region Demographics

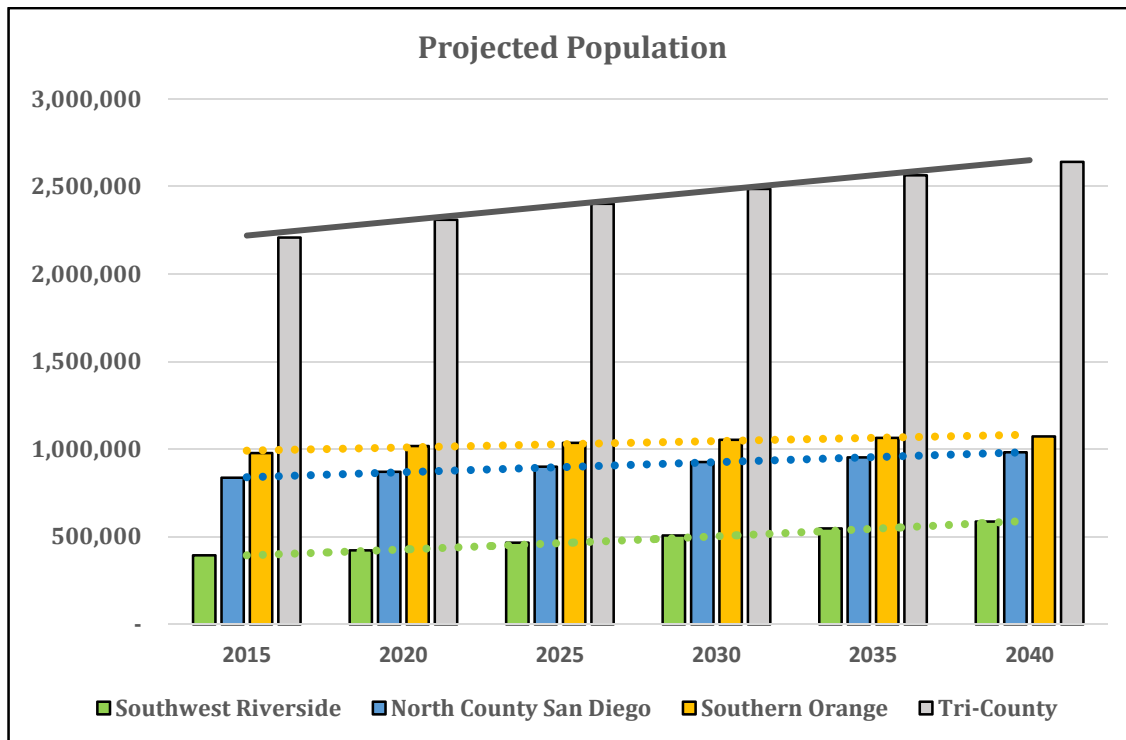
While it is notable that each subsection of the Tri-County has unique differences related to its respective region, viewing the Tri-County as a whole will demonstrate the collective demand for an international airport centrally located in North San Diego County as an essential resource for the region.

Population

As displayed in Figure 1.6 below, the projected population growth of the Tri-County area is expected to steadily increase. By 2040, San Diego, Orange and Riverside counties are projected to increase by 21%, 10%, and 58%, respectively. In total, the Tri-County region population is projected to increase by 23% reaching a total of 2.7 million residents in 2040.

Total Population Growth (2010-2040)	Tri-County	Southwest Riverside County	North County San Diego	Southern Orange County
	22.7%	58.0%	20.8%	10.1%

Figure 1.6: Tri-county population and growth rates.



As displayed Table 1.2 below, the composition of age in the Tri-County area demonstrates the bulk of the population is between 20 and 59 years of age. This trend is projected to remain constant through 2040, as 49% of the population will fall in this 30-year age span. The population in this target age range is expected to grow 13% by 2040 while it will lose 10% of the overall share of the age distribution, indicating that there will be an aging population.

It is important to note that those individuals between the ages of 20 and 59 in 2040 will have been born between the years 1980-2020. Current marketing data demonstrates that the average age of an air traveler is 44 years. If the average age remains similar in 2040, the average air traveler will be from the Millennial generation (born between 1981 and 1996). While current research indicates that the Millennial generation values technology, information, and connectedness, it is unknown how future events will shape this generation who will become the average air travel passengers. Future ongoing understanding of the Millennial generation is needed to both market to and meet the needs of the changing clientele.

Racial and Ethnic Composition

Another characteristic of the Tri-County population that is important to analyze is the racial and ethnic makeup of the region. The fastest growing racial group in the Tri-County is the Asian population, projected to increase 34%, or 77,000, from 230,000 in 2010 to 307,000 in 2040. This is important to note as this may drive air travel demand to and from Asia. In addition, the largest racial group, those self-identifying as White, is projected to remain flat throughout the Tri-County region while experiencing negative growth in Orange County.

Tri County Age Distribution (by share of total population)		
Age Range	2010	2040
0-9	13%	12%
10-19	15%	12%
20-29	15%	13%
30-39	14%	12%
40-49	14%	13%
50-59	13%	12%
60-69	8%	10%
70-79	5%	9%
80-89	3%	6%
90-99	1%	1%
100+	0%	0%

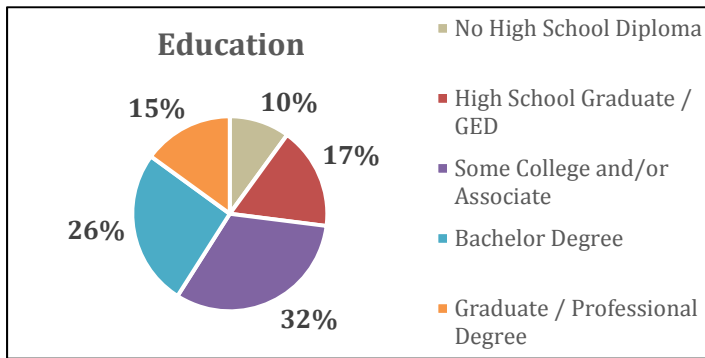
Table 1.2: Age Demographics.

It is also important to note that there will be substantial growth in the Hispanic population throughout the region. Those who self-identify as ethnically Hispanic are not

represented in the racial statistics because they may be of any race. The U.S. Census Bureau treats race and ethnicity as separate categories. This ethnic group is projected to see a population increase of 55% by 2040 of which 82% of this growth will occur in Riverside County. This large increase is important because currently 31% of air travelers at LAX self-identify as Hispanic (JCDcaux), demonstrating the importance of meeting the needs of Hispanic air travelers in the future.

Education

As previously illustrated through the air traveler marketing research, the more



educated an individual is, the more likely he or she is to travel by air. In 2014, of the population over 25 years of age, Orange County residents have the greatest percentage of higher-level educational attainment at

52% and Riverside residents have the lowest percentage at 26%. San Diego County is in the middle at 32%. Together, 40% of adults 25 years or older in the Tri-County region hold a

Figure 1.7: Tri-county education demographic.

college degree, suggesting that this educated population is likely

to travel by air. While forecast data for higher-level educational attainment is not currently available, it can be assumed that through 2040 educational trends will either remain similar to current educational attainment rate or continue to increase as more resources become available to provide access to higher-level education.

Socioeconomics

Air travel is more costly than equivalent ground transportation, therefore wealth is a valuable demographics characteristic to consider. To study the financial ability needed to access air travel, an analysis of household income is useful. In 2014 the average household income in San Diego, Riverside and Orange counties are \$90,000, \$94,000 and \$122,000, respectively. In the Tri-County region, the average household income is \$105,000, and 40% of those households bring in more than \$100,000. The largest contribution of wealth to the Tri-County region is attributed to Orange County residents, where 47% of the households earn more than \$100,000 annually. On average, Orange County households earn \$16,000

more than the average Tri-County household. Current research suggests that the average U.S. air traveler comes from a household earning \$100,000. This statistic is in line with the Tri-County region where the average household earns \$105,000 annually. This implies that those living within the Tri-County region have the financial wherewithal to access air travel.

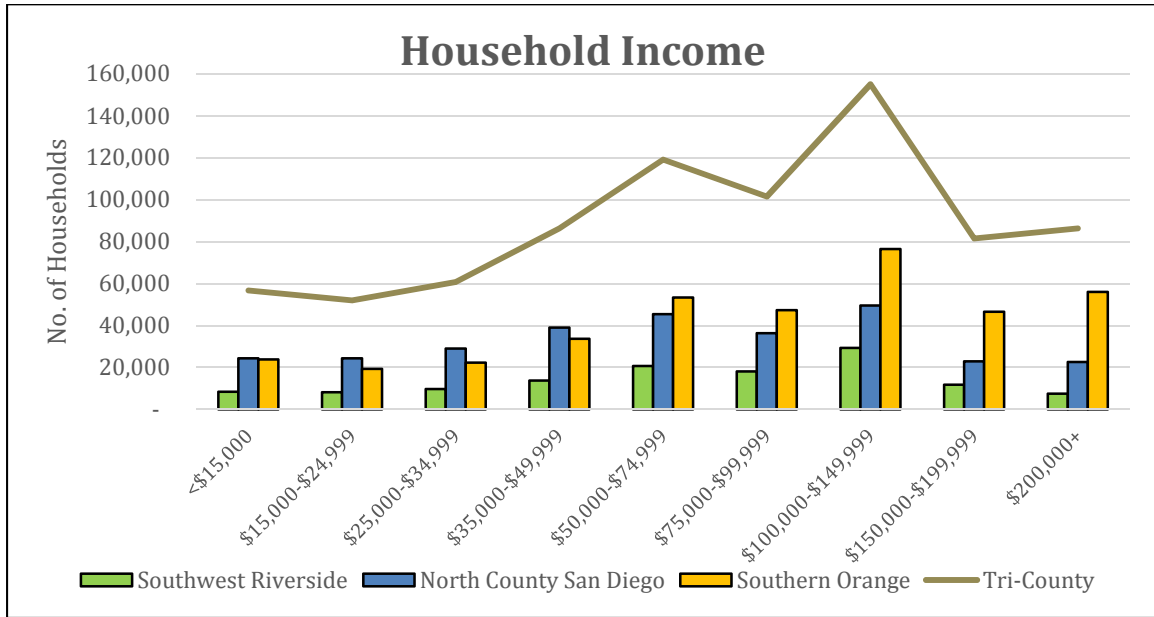


Figure 1.8: Tri-county HHI demographic.

Similar to average household income, the disposable income measure takes into account the after-tax annual income available for personal necessities, saving, and spending. Figure 1.9. While the average disposable income for the Tri-County region is \$79,000, North San Diego, South Orange, and Southwest Riverside County demonstrate averages of \$69,000, \$89,000, and \$73,000, respectively. Similarly, the median disposable incomes for the Tri-County region is \$64,000, while North San Diego, South Orange, and Southwest Riverside County are \$53,000, \$75,000 and \$62,000, respectively. Looking specifically at San Diego County, there is a greater level of positive skew. The mean is 30% less than the average, demonstrating that there are some very high incomes moving the average north of the median measure. Out of the three regions, Riverside County has the highest share of annual household income as disposable income at 77.4%. This is most likely attributed to lower housing costs and standards of living as compared to San Diego and Orange counties.

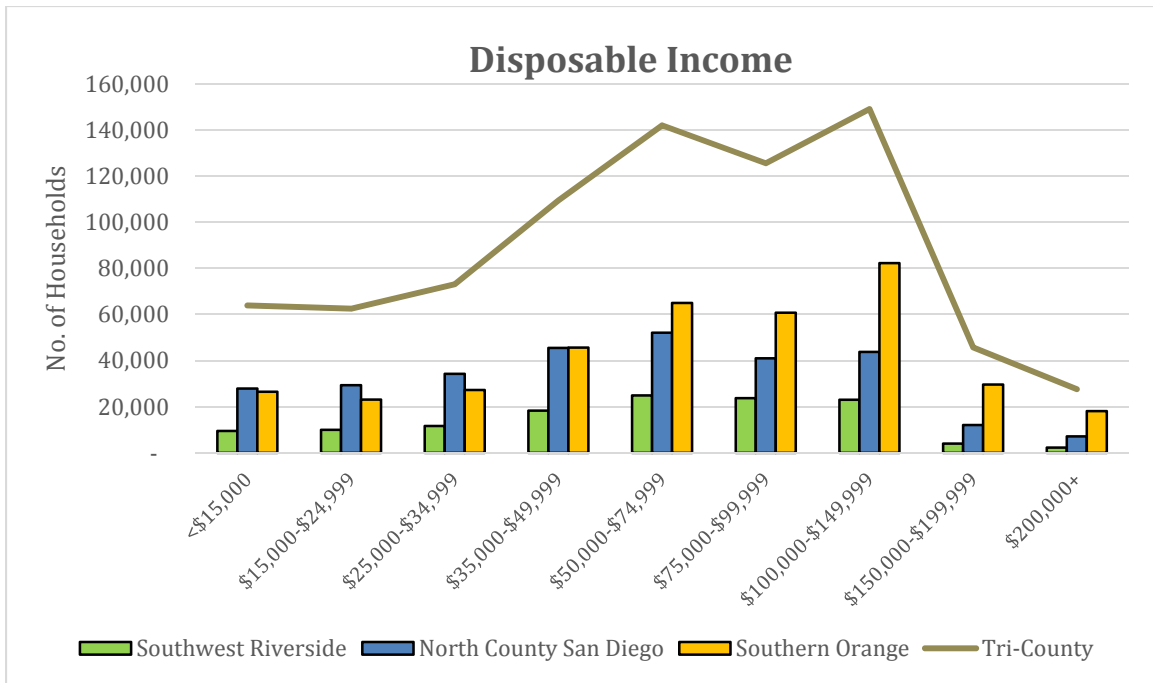


Figure 1.9: Tri-County disposable income demographic.

Propensity for Travel

Individuals' propensity to travel is of particular interest when analyzing regional air travel needs and current air travel behaviors. Current air travel data provides a comparison of the specified region against the U.S. average, using an index as a comparison tool for consistency. The total amount spent on airline fares in the Tri-County region in 2014 is estimated at over \$617 million dollars, 64.1% higher than the United States average for the same time period. Each individual county in the region is above the U.S. average with Southern Orange County residents spending 94% more money than the U.S. average. Additionally, Orange County residents took twice as many than the national average of three foreign trips by plane in the last three years, which is 97% higher than the U.S. average. This high level of frequent foreign travel may be attributed to the large and growing Asian population in the area as well as the highest disposable incomes in the region.

Beyond international travel, it is important to note people who live in the Tri-County region have a high propensity to travel by air. They exceed national averages on all studied measures of air travel activity, including: the percentage of residents who took more than three round trips in the last twelve months; the number of domestic trips by plane in the last twelve months; and the number of foreign trips by plane in the past three

years. Household members living in the Tri-County region are 53% more likely than the average American Household to be members of frequent flyer programs. Thirty-five percent of households are home to at least one resident holding a passport, higher than the national average.

2014 Travel Statistics Index (National Average = 100)	Tri-County	Southwest Riverside	North County San Diego	Southern Orange
Frequent Flyer Program Members	152.9	142.8	127.2	176.4
Residents Who Own a Valid Passport	135.3	140.3	122.8	148.9
Took 3+ Round Trips by Plane in /12 mo.	155.1	147.5	121.7	183.9
Took any Domestic trip by plane (scheduled)/12 mo	138.7	136.0	116.1	157.4
Took 1 foreign trip by plane in /3 yrs	131.3	125.8	119.1	142.7
Took 2 foreign trips by plane in /3 yrs	154.2	134.8	136.3	174.9
Took 3+ foreign trips by plane in /3 yrs	163.9	126.7	137.7	196.9
Amount Spent on Airline Fares	\$617,137,615	\$84,709,725	\$191,045,913	\$436,008
Index for Airline Fares Spending	164.1	124.0	136.5	193.8

Table 1.3: Tri-County traveler index.

Conclusions

With this comprehensive study, it is clear that there is strong demand for both domestic and international travel in the Tri-County region. This is in spite of the fact that a substantial proportion of the population is under-served by existing airports as defined by of drive time. The reach of the proposed airport will likely be within a 45-minute drive time. Furthermore, this strong demand is likely to run up against limited supply as major airports in the region are expected to reach their operational capacity in the foreseeable future.

Each of the three counties will individually and collaboratively contribute valuable demographics that will drive future demand for an international airport servicing the Tri-County region. Southwest Riverside is currently determined to be underserved and yet will be a significant factor for the region’s population growth. Southern Orange County is the main source of wealth for the region and will also influence international travel due to its fastest growing and largest Asian population. North San Diego County will contribute a mix of population growth, wealth, and ethnic diversity to the region in addition to a solid infrastructure for transportation and business development.

While it is evident that there is demand for an additional international airport in the Tri-County region, the complexities of implementing the proposed airport must be explored. The following chapters will investigate and analyze similar regional airports throughout the United States to provide comparable projects to benchmark the current task at hand. With the implementation of a new airport, regional employment factors and the multiplier effect of such a large-scale project must be evaluated. Additionally, further research is needed to quantify the current transportation needs of the Tri-County region and how the transportation infrastructure must be configured to support and sustain an interregional transportation hub in the future. Lastly, the political impacts and influences of such a task must be considered in the local context. Successful collaboration amongst interregional areas will be presented as potential recommendations for a prosperous joint venture amongst the Tri-County region.

CHAPTER 2: AIRPORT BENCHMARKING STUDY

Introduction

The Tri-County region is home to an ethnically diverse, well educated, and relatively affluent population. They are representative of today's flying public. In fact, they are more likely to travel internationally than the U.S. population, yet they have limited access to international travel in the immediate region. This chapter begins by investigating the current state and capacity of its existing and planned airport infrastructure for the purposes of estimating how far it will fall short of future demand. The infrastructure considered includes the following six airports: Los Angeles International Airport (LAX), Long Beach (LGB), John Wayne (SNA), Ontario (ONT), San Diego International (SAN), and McClellan-Palomar (CLD). Studies show that that by 2040, these six will be unable to meet the demands of the flying public even once planned improvements are completed. They will fall short of demand by an estimated 30-40 million enplanements –about the number currently served by San Francisco International Airport (SFO).

The second part of Chapter 2 benchmarks the Tri-County and San Diego Regions against other major metropolitan areas currently served by major international airports. These include New York City, served by JFK, LaGuardia, and Newark airports; Chicago, served by O'Hare and Midway, San Francisco, served by SFO and Oakland airports, and Dallas, served by Dallas-Fort Worth and Love Field. Each metropolitan area has at least one major international airport (New York has two), as well as a large airport handling primarily domestic flights.

With such a short runway and no room to expand, SAN (the primary airport for San Diego) cannot accommodate international traffic. The benchmarking study demonstrates that SAN can and should remain a vital domestic gateway, much like Midway, Oakland, and LaGuardia; SCIA in Oceanside, with just a 45-60 minute drive for the majority of the region's population, will be able to accommodate international travel.

Increased demand for air traffic into and out of Southern California will provide growth opportunities within the Tri-County region. This study analyzes how a new international airport in North San Diego County can satisfy growing air traffic demand to better serve the region. A key objective is to identify new opportunities that the proposed airport can address in order to maximize air service to the region while minimizing duplication of effort and cannibalization of other regional airports.

In order to identify new and unmet air traffic needs and strategically position the proposed airport to serve those needs, it is necessary to first examine how regional air traffic demand is currently being served by existing facilities and then project how it will be served in the future. There are six airports considered in this study. They include:

1. San Diego International Airport (SAN)
2. McClellan-Palomar Airport (CLD)
3. Los Angeles International Airport (LAX)
4. John Wayne Airport, Orange County (SNA)
5. Ontario International Airport (ONT)
6. Long Beach Airport (LGB)

This study is designed to provide civic and business leaders in Southern California with a detailed analysis of how the proposed new international airport will satisfy projected increased demand for air traffic to and from the region. The major goal of the study is to identify growth opportunities for air travel to and from the region by defining the unique role that a new international airport will play among other airports serving Southern California.

Research Questions

The following questions will help guide benchmark data collection and analysis:

1. What are the current traffic patterns into and out of Southern California?
2. What air carriers operate out of existing regional airports?
3. What demand is not currently being met by regional airports and what future demand needs to be addressed?
4. How would the proposed airport expand international air traffic to and from the region?
5. Based on benchmark analysis of four other metropolitan areas serviced by multiple airports – San Francisco, Chicago, Dallas, and New York – what conclusions can be drawn about the impact a new international airport would have on air travel to and from the region?

Scope and Limitations

While this study attempts to obtain both current and comprehensive data regarding air traffic patterns to and from the Tri-County region, it must be noted that limitations occur

based on the availability, relevance, and contemporaneousness of data. Furthermore, when extrapolating information from the available data and projecting future demand, all forecasts and estimates represent educated assumptions at best, which may or may not be accurate, since air traffic patterns and conditions within Southern California are subject to change at any time. As a result, estimates and projections made herein are as accurate to the extent possible based on the information available at the time this study was conducted.

Methodology

Using secondary data sources, this study examines current air traffic patterns and compares them with projected air traffic patterns over the next 25 years. The aim is to identify gaps between current and projected needs, and then highlight those gaps as opportunities for positioning the proposed airport. The analysis proceeds in two phases. The first phase analyzes current and projected air traffic patterns into and out of the region. This phase will provide a picture of the needs that existing regional airports serve, as well as future demand to be served. Such a framework will identify gaps between forecasted demand and the abilities of existing airports to meet that growing demand. Filling these gaps should be the primary focus of any new airport built within the region.

The second phase involves a benchmark study of four other major U.S. metropolitan areas serviced by multiple airports. This phase examines how multiple airports serving the same metropolitan area either collaborate or compete to meet air traffic needs related to origin and destination (domestic vs. international traffic). This analysis will provide insight into whether there are gaps (unmet needs) or excessive overlap (leading to competition and cannibalization) in meeting air traffic demand to and from these metropolitan areas. The information obtained from this benchmark study will serve as a basis of comparison for the Tri-County region and paint a clearer picture of how the new proposed airport will interact with other airports in the region. The four benchmarked metropolitan areas and their corresponding airports include:

1. San Francisco Bay Area
 - a. San Francisco International Airport (SFO)
 - b. Oakland International Airport (OAK)
 - c. San Jose International Airport (SJC)
2. Chicago Metropolitan Area
 - a. Chicago O'Hare International Airport (ORD)

- b. Chicago Midway International Airport (MDW)
- 3. New York Metropolitan Area
 - a. Newark Liberty International Airport (EWR)
 - b. LaGuardia Airport (LGA)
 - c. John F. Kennedy International Airport (JFK)
- 4. Dallas Metropolitan Area
 - a. Dallas/Fort Worth International Airport (DFW)
 - b. Dallas Love Field Airport (DAL)

The combined findings of these two phases can then be used to identify the best way to position the proposed airport in terms of the market segments that it will optimally serve, as well as the air travel services these segments need most.

Data Collection

Phase One: Current and Projected Air Traffic Patterns Into and Out of Southern California

This section will examine how existing airports in Southern California are currently serving air traffic demand to and from the region, and how they will serve projected demand in the future. Six airports will be discussed which include:

1. San Diego International Airport (SAN)
2. McClellan-Palomar Airport (CLD)
3. Los Angeles International Airport (LAX)
4. John Wayne Airport, Orange County (SNA)
5. Ontario International Airport (ONT)
6. Long Beach Airport (LGB)

These six airports were selected based on their locations and service to Southern California. All six airports are within a 90-mile radius from the proposed airport location in Oceanside. The locations of the airports are depicted in Figure 2.1. LAX is located farthest from the proposed airport. Travel time to LAX from the North San Diego County line varies widely based on traffic conditions, with an estimated drive time of 90 minutes.

The following sections examine the role of each of these six airports in serving the air travel needs of Southern California. The discussion includes historical background, current operations and demands, and plans for future expansion.



Figure 2.1: Map of regional airports within a 90-mile radius (or 90-minute drive) from the proposed airport location in Oceanside.

San Diego International Airport (SAN)

History

San Diego International Airport (SAN), originally known as San Diego Municipal Airport, was founded in 1928 at the dawn of early aviation. It soon became the first airfield to serve a variety of plane types, including seaplanes. In 1934, the airport was designated as a permanent international airport by the U.S. Treasury Department. Construction of the airport’s current runway began in 1967. However, given that the surrounding area is so heavily populated – San Diego County is currently home to 3,211,252 people (United States Census Bureau, 2014) – a noise curfew was established and has been maintained since 1976 to appease local residents. SAN became the first commercial airport in the United States to

place such restrictions on late night and early morning takeoffs. Although flight arrivals are allowed 24-hours a day, departures are prohibited between the hours of 11:30 PM and 6:30 AM (San Diego International Airport, 2014). It could be argued that lifting this restriction might enable SAN to increase capacity; however, enacting such a change would be difficult and might trigger numerous residential complaints.

Airport Operations and Demand

At present, SAN continues to operate with a single runway that measures 9,401 feet in length and 200 feet in width. This single runway, combined with San Diego's status as such a popular travel destination, make SAN the busiest single-runway commercial airport in the U.S. Currently, the airport has three terminals with 51 gates in Terminals 1 and 2, and four gates at the Commuter Terminal, for a total of 55 gates (San Diego International Airport, 2014). Figure 2.2 below provides a current layout of SAN.

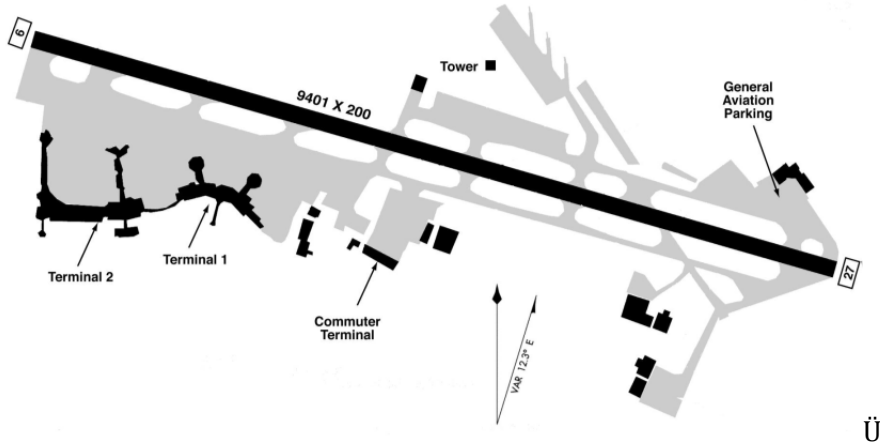


Figure 2.1: San Diego International Airport. Source: Federal Aviation Administration (FAA).

In 2013, SAN served 17,710,241 passengers (San Diego International Airport, 2014) and facilitated 9,075,134 enplanements (RITA, 2014). Of those enplanements, 8,736,412 – or 96.3 percent – were domestic, and only 338,722 – or 3.7 percent - were international. This equates to a total of 82,027 flight departures, of which 79,497 were domestic and only 2,530 were international (RITA, 2014). From these data, it is clear that although SAN is designated as an international airport, it functions primarily as a regional airport that serves the domestic travel market.

Twenty-two passenger carriers and five cargo carriers served the airport in 2013. Passenger carriers provided service to 59 non-stop destinations (San Diego International Airport, 2014). However, international non-stop flights were, and continue to be, largely limited to travel between the U.S. and Canada, the United Kingdom, Mexico, and Japan. As a result, international travelers flying into or out of the San Diego region cannot obtain a direct flight and must first fly into another major international airport to reach their final destinations. For example, since Los Angeles International Airport (LAX) and San Francisco International Airport (SFO) are the major international airports within California that provide non-stop service to and from Asia, a traveler wishing to fly from San Diego to Asia (or from Asia to San Diego) must first board a connecting flight at one of these international gateways. Likewise, a traveler wishing to fly from San Diego to Europe (or Europe to San Diego) must first board a connecting flight at a major international airport located on the eastern seaboard, such as Newark Liberty International Airport (EWR) or John F. Kennedy International Airport (JFK).

The largest passenger carrier operating out of SAN in 2013 was Southwest Airlines, which carried 38.48 percent of passengers (RITA, 2014). Figure 2.3 provides a list of SAN’s carrier shares in 2013. Although San Diego is considered a focus city for Southwest Airlines, it is the largest metropolitan area in the U.S. that is not an airline hub.

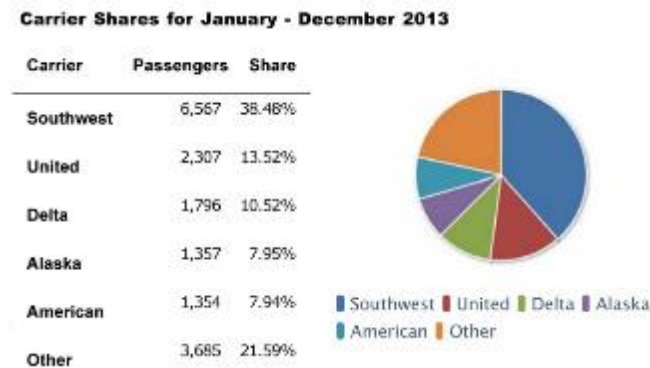


Figure 2. 2: Carrier shares at SAN in 2013. Source: RITA.

By 2040, SAN is projected to have a total of 15,197,155 enplanements, representing an average annual growth rate of 2.5 percent. Additionally, it is projected to rank among other airports with the largest increase in number of enplanements (FAA, 2014). By some estimates, SAN is expected to reach maximum capacity as early as 2030 or as late as 2035. Once maximum capacity is reached, there will be an increase in both flight delays and flight

prices. SAN is approximately 35 miles from the location of the proposed airport in Oceanside.

McClellan-Palomar Airport (CLD)

History

The McClellan-Palomar Airport (CLD) is located in Carlsbad, California and was built to replace the Del Mar Airport. CLD opened in 1959 and in 1961 the airport's single runway was expanded to 4,897 feet (Department of Public Works, 2014).

Airport Operations and Demand

The airport has one terminal in addition to its one runway. Figure 2.4 provides a current layout of the CLD. The airport offers multiple daily connections between Carlsbad and Los Angeles via direct flights on SkyWest, a partner with United Airline Express.

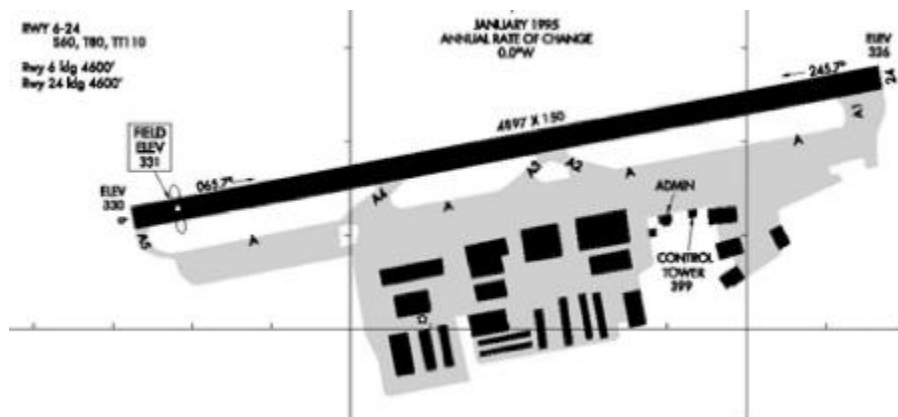


Figure 2.3: McClellan-Palomar Airport Layout.

Figure 2.5 provides a list of CLD's carrier shares in 2013, which indicates that 100 percent of the airport's enplanements are domestic. In 2013, the total number of enplanements was 51,105 (RITA, 2014).

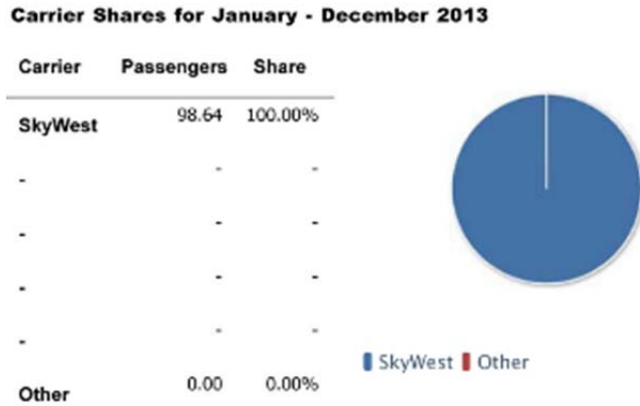


Figure 2.4: Carrier shares at CLD in 2013. Source: RITA.

CLD is projected to have an average growth rate of 5.7 percent between 2013 and 2040. This is more than twice the average growth rate of all other airports studied. For example, John F. Kennedy Airport in New York has the second highest average growth rate in this period at 2.8 percent, far less than CLD (RITA, 2014). To meet this projected growth rate, CLD has a 2013-2035 Master Plan. Through the Master Plan and the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) review process, the County of San Diego and the FAA will determine if a runway extension will be part of future airport improvements (Department of Public Works, 2014). If a runway expansion at CLD is eventually approved and carried out, it should be considered whether the airport could potentially handle some of the overflow from SAN in terms of international travelers flying out of the Tri-County region. CLD is 28 miles from San Diego International Airport and approximately seven miles away from the location of the proposed airport.

Los Angeles International Airport (LAX)

History

In July 1927, real estate agent William W. Mines, representing Martin interests offered 640 acres of the former Bennett Rancho to use as an airport for the City of Los Angeles. Thereafter, the site became known as Mines Field. In July 1928, the City Council chose Mines Field as the location for the City's airport. When the lease was executed in October 1928, the forerunner of Los Angeles International Airport was born (Los Angeles World Airports, 2011). Figure 2.6 provides a current layout of LAX.

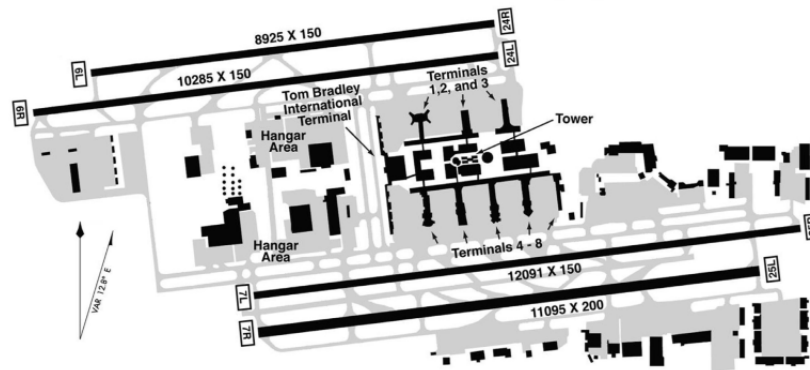


Figure 2.5: Los Angeles International Airport Layout. Source: FAA.

Airport Operations and Demand

The Los Angeles International Airport (LAX) is the primary airport serving the Greater Los Angeles metropolitan area, which is the second-most populous metropolitan area in the United States. In 2012, it was deemed the sixth busiest airport in the world and the third busiest in the country (Ecquants, 2013). While LAX is one of the busiest airports in the world, it has regional competition for serving domestic air travel needs. The list of domestic competitors includes Bob Hope Airport (Burbank), John Wayne Airport, Long Beach Airport, and Ontario International Airport.

LAX is a hub for six major airlines. Three of the airlines are major international carriers, which include American, Delta, and United. The other three airlines are regional carriers, which include Alaska, Horizon and Great Lakes. LAX has direct routes to 87 domestic and 69 international destinations. The international destinations include Latin America, Europe, the Middle East, Asia, and Oceania (Los Angeles World Airports, 2011). Figure 2.7 provides LAX's carrier shares in 2013. LAX is 109 miles from San Diego International Airport and approximately 79 miles away from the location of the proposed airport.

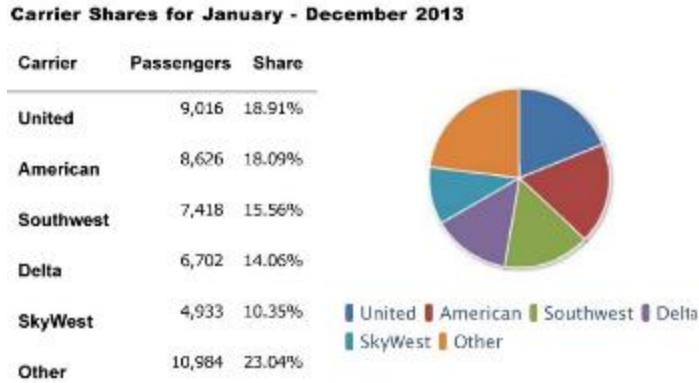


Figure 2.6: Carrier shares at LAX in 2013. Source: RITA.

John Wayne Airport, Orange Country (SNA)

History

John Wayne Airport (SNA) started its operations as a flying school in 1923 and was formerly known as Eddie Martin Airport, which was founded by aviation pioneer Eddie Martin. The airport operated as a privately-owned general aviation facility until 1939 (John Wayne Airport, 2014). In 1979, the airport was renamed John Wayne Airport.

In 2007, SNA recorded its highest number of passengers, estimated at about ten million. In 2011, SNA opened Terminal C as part of \$543 million expansion in anticipation of future passenger growth (Orange County Register, 2013).

Airport Operations and Demand

SNA serves passengers in the Orange County region and is the third largest airport in Southern California (Orange County Register, 2013) with enplanements at 4.9 million in 2013 (FAA, 2014). SNA currently has three terminals with 26 gates and two runways. The main runway is 5,701 feet, which is one of the shortest at any major airport in the United States and limits landing of passenger aircrafts larger than the Boeing 757. Of travelers to the airport, 95.7 percent are domestic and 4.3 percent are international. Figure 2.8 provides a current layout of the airport. In 2013, SNA transported 43 million pounds of combined freight and mail (RITA, 2014).

Benchmarking Against Other Regions Served by Multiple Major Airports

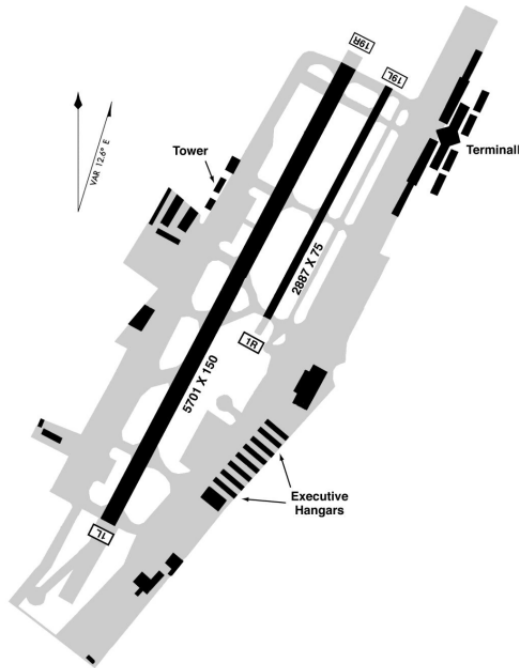


Figure 2.7 : John Wayne-Orange County airport layout. Source: FAA.

Fourteen domestic carriers serve SNA. The airport’s biggest carriers are Southwest Airlines, United Airlines, and American Airlines. SNA’s carrier shares for 2013 are shown in Figure 2.9. Southwest, United, and American carry 39.37 percent, 17.59 percent, and 12.83 percent, respectively (RITA, 2014). SNA is 76 miles from San Diego International Airport and approximately 43 miles away from the location of the proposed airport.

Carrier Shares for January - December 2013



Figure 2.8: Carrier shares at SNA in 2013. Source: RITA.

Ontario International Airport (ONT)

History

Ontario International Airport was initially established as Latimar Field in 1923. In 1942, two concrete runways were constructed with funds provided by the Works Progress Administration (LAWA, 2014). In 1946, the airport was renamed Ontario International Airport (ONT). In the 1950s, ONT experienced dynamic growth given the fact that three major aircraft manufacturers, including Lockheed, Douglas, and Northrop, had facilities there (LAWA, 2014).

In 1998, the "new" Ontario International Airport opened. The \$270 million project included two new terminals, a new ground transportation center, an additional parking lot, a new roadway system, and airfield improvements (LAWA, 2014).

Airport Operations and Demand

Ontario International Airport is a medium-sized hub and full-service airport with commercial jet service. It primarily serves domestic passengers, with annual domestic enplanements totaling two million in 2013 (FAA, 2014). ONT currently has three terminals with 35 gates and two runways. The main runway is 12,200 feet (LAWA, 2014). Figure 2.10 provides a layout of the airport. Of the airport's travelers, 98.6 percent are domestic and only 1.4 percent are international. ONT serves as a major hub for many freight carriers including UPS, FedEx, Ameriflight, West Air and Empire Airlines. In 2013, ONT transported 940 million pounds of combined freight and mail (RITA, 2014).

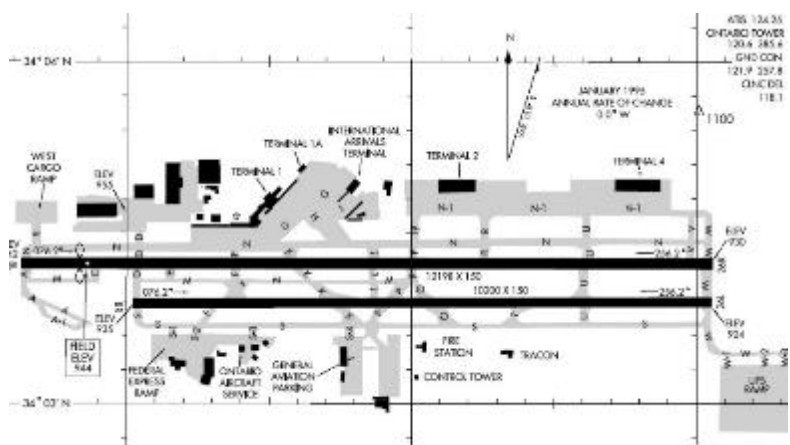


Figure 2.9: Ontario International Airport Layout. Source: FAA.

Benchmarking Against Other Regions Served by Multiple Major Airports

Currently, 12 carriers serve ONT. Southwest Airlines is the largest carrier, which carries 59.12 percent of passengers (RITA, 2014). Figure 2.11 provides a list of ONT's carrier shares in 2013. ONT is 94 miles away from San Diego International Airport and approximately 60 miles away from the location of the proposed airport.



Figure 2.10: Carrier shares at ONT in 2013. Source: RITA.

Long Beach-Daugherty Field Airport (LGB)

History

During the 1920's, aircraft with flight plans to Long Beach were actually forced to land on the beach during low tide. After considerable lobbying and publicity-driven stunt flights, the famous barnstormer Earl S. Daugherty gained city support for an airfield (Long Beach Airport, 2014). In 1923, the City Council designated 150 acres of land on the outskirts of town at the intersection of Spring Street and Cherry Street for use as a municipal airport. The airport started service in 1925. In 1928, the city built an administrative hanger as part of a strategic move to entice the Navy to lease the airport and establish a Naval Reserve Airbase. The partnership with the Navy resulted in the construction of two new runways and the annexation of an additional 350 acres (Long Beach Airport, 2014).

Airport Operations and Demand

Presently, Long Beach Airport (LGB) is comprised of 1,166 acres and five runways, the longest being 10,000 feet (Federal Aviation Administration, 2014). Figure 2.12 provides a current layout of the airport.

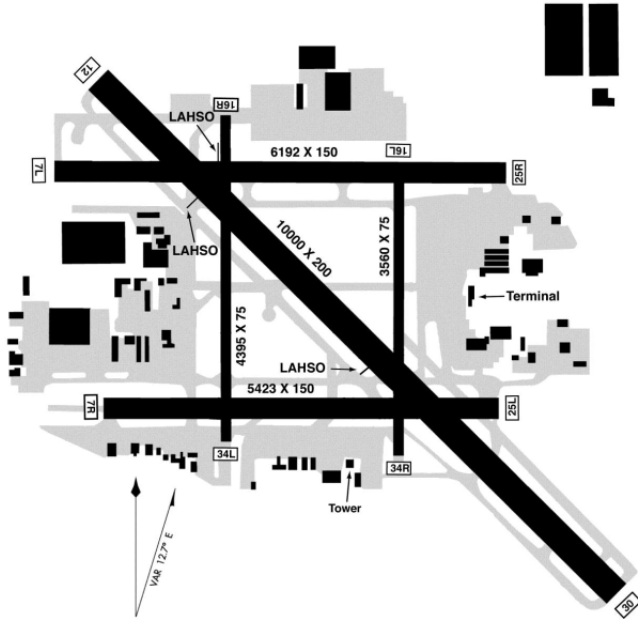


Figure 2.11: Long Beach-Daugherty Field Airport layout. Source: FAA.

Due to LGB’s close proximity to LAX and strict noise regulations imposed by the surrounding communities, LGB will remain a small airport for the foreseeable future. The airport is under one of the strictest ordinances in the U.S. in terms of airport noise and number of flights. The FAA only permits 41 commercial flights and 25 commuter flights daily. In spite of the rigid flight regulations, the airport managed to secure a deal with economy carrier, JetBlue, to establish its West Coast hub at LGB. JetBlue licenses 31 of LGB’s 41 gates and is recognized as an alternative to LAX. Figure 2.13 provides a list of LGB’s carrier shares in 2013. In 2010, the airport had 329,808 aircraft operations, which equates to 903 flights per day. Of these flights, 86 percent comprised general aviation, 10 percent commercial, three percent air taxi, and less than 1 percent military. At that time, there were 435 aircraft stationed at the airport, of which 69 percent were single-engine, 11 percent multi-engine, 11 percent jet, and 10 percent helicopter (Bureau of Transportation Statistics, 2014). LGB is 93 miles from San Diego International Airport and approximately 62 miles away from the location of the proposed airport.

Benchmarking Against Other Regions Served by Multiple Major Airports

Carrier Shares for January - December 2013

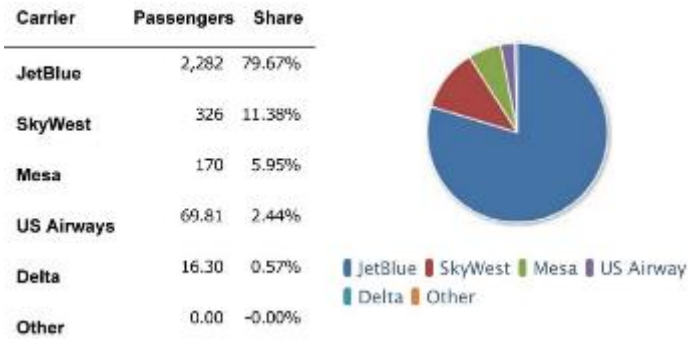


Figure 2.12: Carrier shares at LGB in 2013. Source: RITA.

In this section, six regional airports within the Southern California are discussed. Table 2.1 summarizes the information provided on these airports, including year founded, number of enplanements (domestic vs. international), and distance from the location of the proposed airport in Oceanside.

Region	Airport	Year Opened	No. Runways	No. Total Enplanements in 2013 (M)	% Intl. Enplanements 2013	Projected Enplanements 2040 (M)	Distance From Proposed Airport (Miles)
Southern California Area	SAN	1928	1	9.08	3.7%	15.20	35
	CLD	1959	1	0.5	0.0%	0.13	7
	LAX	1928	4	33.09	26.4%	53.62	79
	SNA	1923	2	4.58	4.3%	7.99	43
	ONT	1923	2	2.00	1.4%	3.26	60
	LGB	1923	5	1.44	0.0%	2.43	62

Table 2.1: Summary of key information on Southern California airports, including SAN, CLD, LAX, SNA, ONT, and LGB.

Phase Two: Benchmark Study of Four Other Major U.S. Metropolitan Areas Serviced by Multiple Airports

In this section, a benchmark study will be conducted of four other major U.S. metropolitan areas serviced by multiple airports, including San Francisco, New York, Dallas, and Chicago. This phase examines how multiple airports serving the same metropolitan area either collaborate or compete to meet air traffic needs related to origin and destination (domestic vs. international traffic).

San Francisco Bay Area

The San Francisco Bay Area is a diverse region comprised of metropolitan, suburban, and rural areas that are home to more than 7.4 million people (United States Census Bureau, 2014). Three major airports serve the area: San Francisco International Airport (SFO), Oakland International Airport (OAK), and San Jose International Airport (SJC). These airports meet both domestic and international travel needs for the surrounding areas. SFO is 11 miles from OAK, OAK is 30 miles from SJC, and SJC is 30 miles from SFO (RITA, 2014). The presence of multiple major airports within the heart of the Bay Area provides travelers with a variety of options for their air travel needs. Despite their close proximity to one another, they work together collaboratively to satisfy air traffic demand into and out of the region.

The projected average growth rates for the Bay Area airports between 2013 and 2040 are comparable, at 2.4 percent, 2.0 percent, and 2.5 percent for SFO, OAK, and SJC, respectively. These percentages are slightly below the average growth rates for the other airports examined in this study; the highest growth rate was 5.7 percent for CLD, located in the Tri-County area, and the lowest growth rate was 1.1 percent for LGA, located in the New York metropolitan area.

San Francisco International Airport (SFO)

History

SFO opened in 1927 as Mills Field Municipal Airport of San Francisco on leased land from the Mills estate, then as San Francisco Airport in 1931. In the 1950s, it finally became known as San Francisco International Airport (San Francisco International Airport, 2014).

Airport Operations and Demand

SFO is the largest airport in the Bay Area and is located near downtown San Francisco. The airport serves over 45 million annual passengers (San Francisco International Airport, 2014) and is made up of four long runways and four terminals as seen in Figure 2.14 below. The runways range in length from 7,500 feet - 11,870 feet. The four terminals consist of three domestic terminals and one international terminal. The airport further acts as a hub for United Airlines and Virgin America. Figure 2.14 provides a current layout of SFO, including its terminals and two sets of parallel runways, which assist the airport in meeting increased demand for international travel.

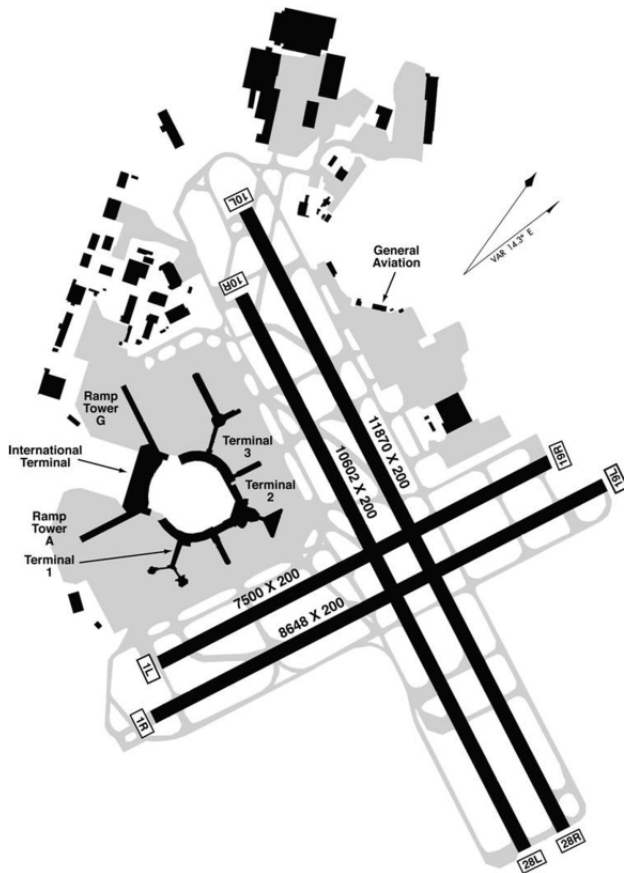


Figure 2.13: San Francisco International Airport Layout. Source: FAA.

SFO offers both domestic and international airport travel and is considered a gateway to Asia and Europe. It offers non-stop flights to more than 34 international cities on 29 international carriers and connects non-stop with 78 cities in the U.S. on 15 domestic airlines (San Francisco International Airport, 2014).

As of 2013, the number of domestic enplanements was 17,123,296 and the number of international enplanements was 4,718,958 (RITA, 2014). Thus, domestic enplanements accounted for 78.4 percent of the total number of enplanements, while international enplanements accounted for 21.6 percent. Of these international enplanements, 45.2 percent involved international travel to Asia and the Middle East with flights to Beijing, Hong Kong, Taipei, Tokyo, Osaka, Seoul, Shanghai, Chengdu, Manila, and Dubai (San Francisco International Airport, 2014).

In recent years, SFO has made efforts to target the Asian market by launching a Chinese language website. This website is the first website of its kind offered in the United States. San Francisco Mayor Ed Lee has stated, “San Francisco is a City of innovation, and we

Benchmarking Against Other Regions Served by Multiple Major Airports

are proud to be the first airport in the U.S. to offer a website in Chinese. SFO’s Chinese language website further connects our City with China, strengthens the economic and cultural ties between our two regions, while providing our diverse communities and travelers with an easier way to make our City and SFO their destination of choice.”

Europe is SFO’s second largest international travel destination, with travel to Amsterdam, Copenhagen, Dublin, Frankfurt, London, Munich, Paris, and Zurich, followed by travel to Canada, then Mexico/Central and South America, and lastly Australia. SFO’s major domestic carriers are United, SkyWest, Southwest, American, and Delta airlines, and its carrier shares are shown in Figure 2.15. SFO is a hub for United Airlines and Virgin America Airlines.

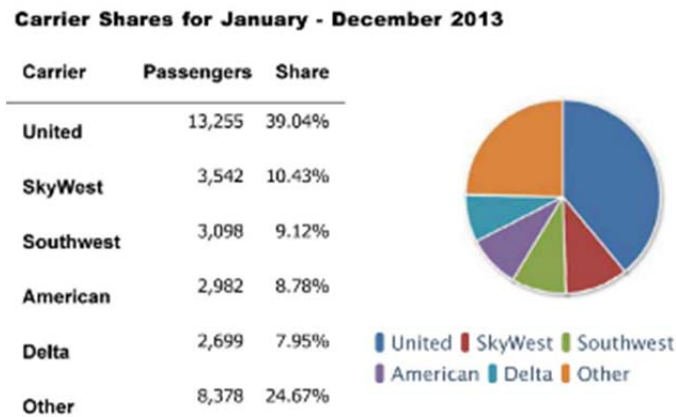


Figure 2.14: Carrier shares at SFO in 2013. Source: RITA.

Oakland International Airport (OAK)

History

Oakland International Airport (OAK) is located near downtown Oakland. It opened in 1927. OAK is comprised of two terminals and four runways, as shown in Figure 2.16. The runways vary in length, from 3376 feet to 10,520 feet (Airport IQ 5010, 2014).

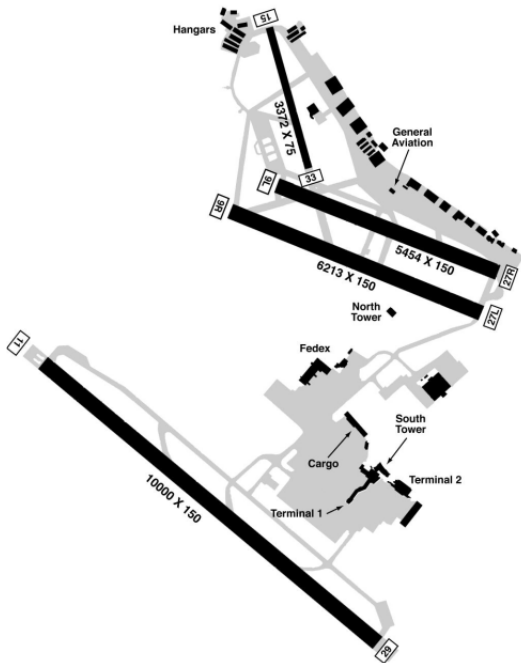


Figure 2.15: Oakland International Airport layout. Source: FAA.

Airport Operations and Demand

OAK provides domestic and international travel, offering flights to numerous domestic destinations as well as international destinations in Europe (Norway, Sweden, and Portugal) and Mexico (Oakland International Airport, 2014). Currently, 98.4 percent of OAK’s enplanements are domestic, while 1.6 percent of enplanements are international. As of 2013, the number of domestic enplanements was 48,902,777 and the number of international enplanements was 77,843. OAK serves as a major hub for FedEx; additionally, the domestic carriers used most frequently by passengers include Southwest, Alaska, JetBlue, Hawaiian, and Spirit. The airport’s carrier shares in 2013 are highlighted in Figure 2.17.

By 2040, the projected total number of enplanements is expected to reach 7,701,635. This is almost twice the number of 2013 enplanements, which is estimated at 4,968,120 (RITA, 2014). To meet the projected increase of enplanements, OAK has a Master Plan Project concerning long-term forecasts projected out to 2025. Without an additional runway, the expected increase in enplanements and annual tons of cargo will not be achievable. However, at this time, an additional runway is not recommended in OAK’s Master Plan. Some items under consideration include an increase in the total number of

Benchmarking Against Other Regions Served by Multiple Major Airports

available gates, terminal development, and airfield improvements (Oakland International Airport, 2005).



Figure 2.16: Carrier shares at OAK in 2013. Source: RITA.

San Jose International Airport (SJC)

History

The San Jose International Airport (SJC), otherwise known as the Norman Y. Mineta San Jose International Airport, opened in 1948. The airport is named after a former San Jose mayor who served three decades in the U.S. House of Representatives and as U.S. Secretary of Commerce and U.S. Secretary of Transportation (Mineta San Jose International Airport – SJC, 2014). With his background, Mr. Mineta brought much political support to the development of SJC. SJC is located in downtown San Jose, which is in the heart of Silicon Valley. This airport is the smallest of the three Bay Area airports (Mineta San Jose International Airport – SJC, 2014).

Airport Operations and Demand

SJC is comprised of two 11,000-foot runways and two terminals that handle domestic and international travel. Figure 2.18 provides a layout of the airport.

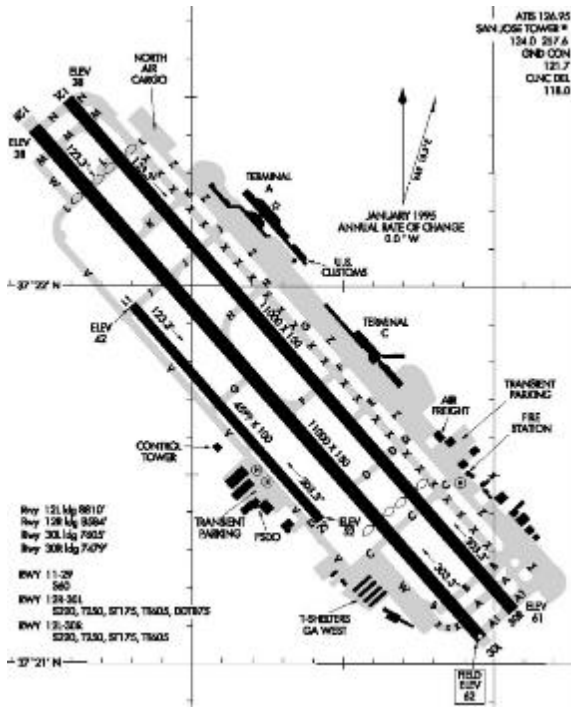


Figure 2.17: San Jose International Airport layout. Source: SJC International Airport.

Non-stop destinations served by the airport include numerous domestic destinations and international destinations such as Guadalajara, Mexico and Tokyo, Japan. SJC primarily provides domestic service with 96.4 percent of 2013 enplanements being domestic and 3.6 percent of enplanements being international. As of 2013, the number of domestic enplanements was 4,280,424 and the number of international enplanements was 161,881 (RITA, 2014). SJC’s major domestic carriers are Southwest, Alaska, American, SkyWest, and US Airways, as shown in Figure 2.19.

Carrier Shares for January - December 2013

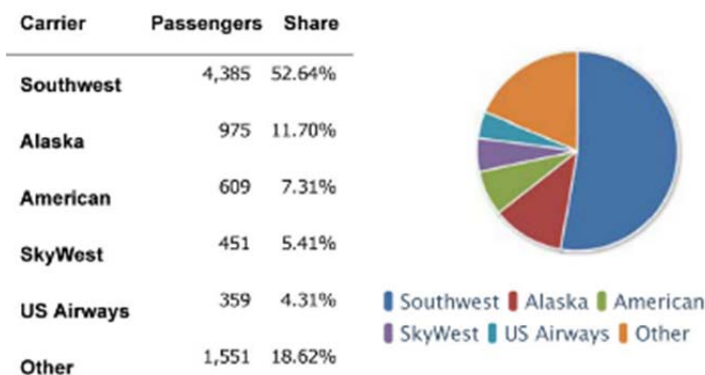


Figure 2.18: Carrier shares at SJC in 2013. Source: RITA.

Benchmarking Against Other Regions Served by Multiple Major Airports

In 2013, SJC facilitated 4,402,305 enplanements. Similar to OAK, the number of enplanements out of SJC in 2040 is expected to almost double to 7,406,884 total enplanements (RITA, 2014). SJC has a 2011–2027 Master Plan that consists of a program of facility improvements designed to adequately accommodate projected aviation demand (Mineta San Jose International Airport – SJC, 2014). Seventy specific project developments are discussed, such as runway extensions, increases in number of carrier gates, and possible expansion of airport facilities.

Chicago Metropolitan Area

Two major airports serve the Chicago metropolitan area: Chicago O'Hare International Airport (ORD) and Chicago Midway International Airport (MDW). ORD is 16 miles from MDW. Similar to the airport facilities that comprise the airport system in the San Francisco Bay Area, the Chicago airports also work together collaboratively to satisfy air traffic demand to and from the region.

Chicago O'Hare International Airport (ORD)

History

Chicago O'Hare International Airport (ORD) officially opened in 1955. ORD originally had four runways and served 176,902 passengers in its first year. Since then, ORD has undergone numerous expansions to accommodate increasing air traffic demand. Its fifth runway was added in 1957 and its first international terminal opened its doors in 1958. In the 1960s, all scheduled Midway Airport operations were transferred to ORD. With more terminal buildings and a sixth runway, ORD's passenger traffic exceeded 30 million, making it one of busiest airports in the world (Chicago O'Hare Airport, 2014).

In the 1970s, ORD grew steadily and added a seventh runway. Deregulation of the domestic airline system signed into law by President Jimmy Carter in 1978 allowed ORD to become the nation's first dual hub airport. ORD provided competitive airfares and more service to more destinations than any other airport in the world (Chicago O'Hare Airport, 2014).

In 1980s, with completion of the South Cargo Area, ORD became the nation's largest mid-continent freight origin and destination market. In the 2000s, the O'Hare Modernization Program (OMP) was approved, which intended to increase the airport's efficiency, capacity, and safety by modernizing parallel runway layout. At that time, the FAA

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provided ORD \$337 million in funding for the initial phase of the program and \$400 million for the final phase (Chicago O'Hare Airport, 2014).

Airport Operations and Demand

Chicago O'Hare Airport is currently the fifth busiest airport in the world and second busiest in the U.S., with annual enplanements totaling 32.5 million – or 66.9 million passengers – in 2013 (FAA, 2014). ORD currently has four terminals with 189 gates and eight runways. Figure 2.20 provides a current layout of ORD. Among the eight runways, the longest runway length is 13,001 feet, which was extended by 3,000 feet under the OMP (Chicago O'Hare Airport, 2014). Approximately 83.6 percent of enplanements are domestic and 16.4 percent are international. In 2013, ORD transported 751 million pounds of combined freight and mail (RITA, 2014).

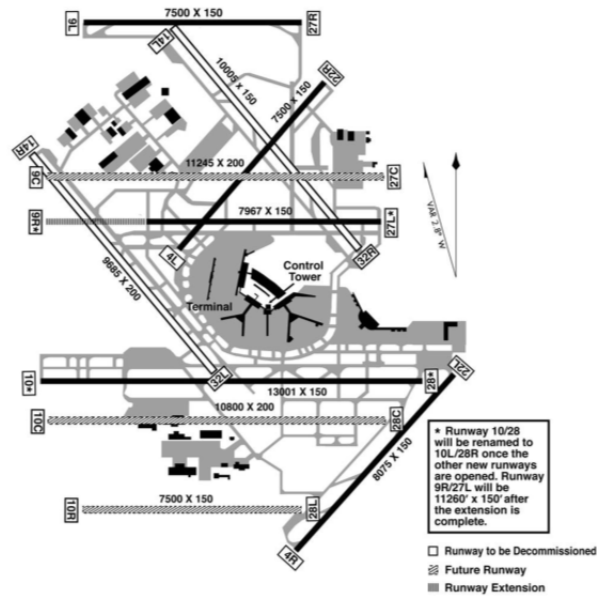


Figure 2.19: Chicago O'Hare International Airport layout.
Source: FAA.

Forty-two airlines serve ORD (JCDecaux, 2014). American Airlines and United Airlines maintain hubs at ORD, with American Airline carrying 26.81 percent of passengers and United Airline carrying 22.67 percent, as highlighted in Figure 2.21 (RITA, 2014). ORD is also used by FedEx as its cargo hub (Chicago O'Hare Airport, 2014).

Currently, ORD serves as the main international airport in the Chicago metropolitan area, with 5.3 million international enplanements in 2013 (FAA, 2014). ORD is 16 miles away from its sister airport, Chicago Midway International Airport, which mainly serves domestic travelers.

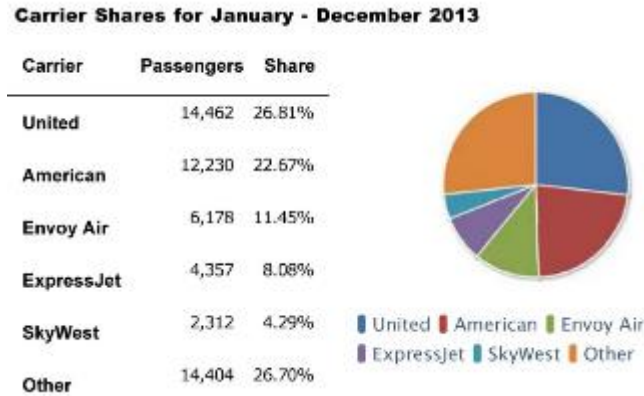


Figure 2.20: Carrier shares at ORD in 2013.
Source: RITA.

Chicago Midway International Airport (MDW)

History

Chicago Midway International Airport (MDW) officially opened as Chicago Municipal Airport in 1927 just six months after Charles Lindbergh made his historic transatlantic flight. In 1928, MDW had 41,660 passengers and 14,498 flights (Chicago Midway Airport, 2014). By 1929, MDW was recognized as the world's busiest airport. In 1949, the airport was renamed Midway International Airport in honor of the Battle of Midway during World War II (Chicago Midway Airport, 2014).

In competition with ORD, passenger traffic through Midway plummeted 60 percent by 1961 (Encyclopedia of Chicago, 2014). After the deregulation of the airline industry in 1978, MDW had re-emerged as a haven for small carriers serving Chicagoans and offered competitively priced flights (Encyclopedia of Chicago, 2014). In 1991, Midway Airlines, which operated 72 percent of traffic in MDW, declared bankruptcy and planned to cease operations later that year. However, in 1992, Southwest Airlines signed a substantial contract with the City of Chicago, becoming the major carrier at MDW. This contract prevented the airport from having to cease operations. By 1998, Southwest Airlines operated 102 flights per day (Chicago Midway Airport, 2014). In 2012, Midway reached its highest passenger total in the airport's 85-year history, with 19.5 million passengers (Chicago Midway Airport, 2014).

Benchmarking Against Other Regions Served by Multiple Major Airports

Airport Operations and Demand

Chicago Midway International Airport (MDW) primarily serves domestic travelers, with annual enplanements totaling 10.4 million in 2013 (FAA, 2014). MDW currently has three terminals with 43 gates and 5 runways. Among its five runways, the longest runway length is 6,521 feet (Chicago Midway Airport, 2014). Over 97.5 percent of MDW's travelers are domestic and only 2.5 percent are international. In 2013, the airport handled 52 million pounds of combined freight and mail (RITA, 2014). Figure 2.22 provides a current layout of MDW.

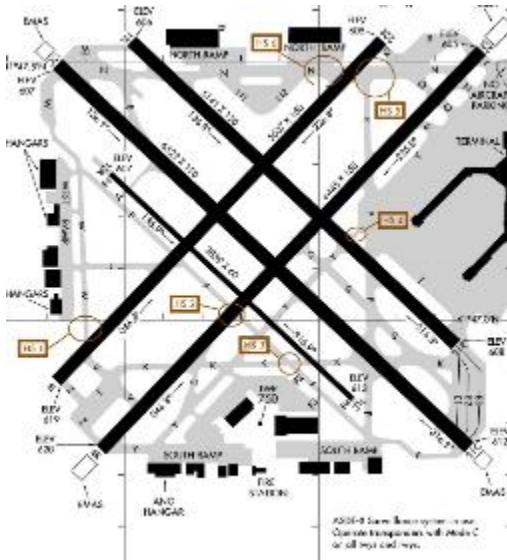


Figure 2.21: Chicago Midway Airport layout.
Source: FAA.

Twenty-six domestic carriers served MDW in 2013 (RITA, 2014). Additionally, the airport serves as a hub for Southwest Airlines, which carried 90.1 percent of MWD's total passengers (RITA, 2014). At the present time, MDW's flights are largely domestic. Figure 2.23 provides a list of MDW's carrier shares in 2013.

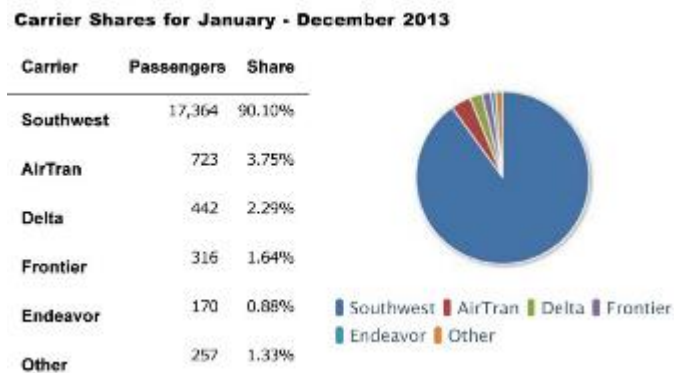


Figure 2.22: Carrier shares at MDW in 2013.
Source: RITA.

New York Metropolitan Area

Three major airports serve the New York metropolitan area: Newark Liberty International Airport (EWR), LaGuardia Airport (LGA), and John F. Kennedy International Airport (JFK). These airports combine to form the largest airport system in the country. The distance from JFK to LGA is 11 miles, the distance from LGA to EWR is 17 miles, and the distance from EWR to JFK is 21 miles. In 2013, this airport system served a record number of passengers, with a total of 112.5 million (Port Authority of NY and NJ, 2014). Like the San Francisco area airports, the airports in this system work collaboratively to meet high levels of air traffic demand. The estimated population of this metropolitan area in 2013 was 19,949,502 people (U.S. Census Bureau, 2014).

Newark Liberty International Airport (EWR)

History

Newark Liberty International Airport (EWR), originally Newark Airport, opened in 1928. It was operated by the City of Newark, which spent over \$8.2 million on its construction and development. Newark was the first major airport in the New York metropolitan area and soon became home to the country's first commercial airline terminal, which was dedicated in 1935. The Port Authority of New York and New Jersey took control of the airport in 1948 and has since invested over \$4.3 billion in improvements. EWR, which is conveniently located just 14 miles from Manhattan, serves an important role for the New York-New Jersey metropolitan area in serving its domestic and international travel needs (Port Authority of NY and NJ, 2014).

Airport Operations and Demand

EWR covers 2,027 acres and has three runways, with its longest runway measuring 11,000 feet long by 150 feet wide. Currently, EWR is one of the busiest airports in North America and among the busiest international airports in the world, having served 35,016,236 passengers in 2013. The airport has three terminals, with a combined total of

Benchmarking Against Other Regions Served by Multiple Major Airports

over 100 gates (Port Authority of NY and NJ, 2014). Figure 2.24 provides the layout of EWR, including its terminals and two runways.

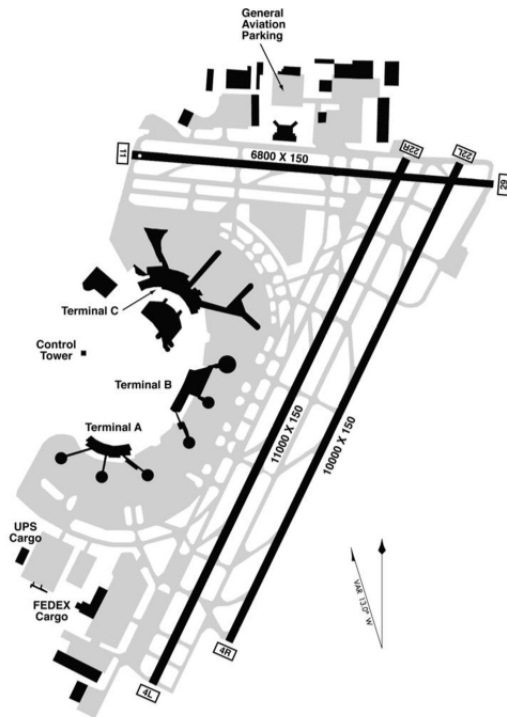


Figure 2.23: Newark Liberty International Airport layout.
Source: FAA.

In 2013, EWR had a total of 17,588,427 enplanements, of which 11,975,589 (68.1 percent) were domestic and 5,612,838 (31.9 percent) were international. This translates to 190,583 flight departures, of which 145,532 were domestic and 45,051 were international. By 2040, the airport is projected to oversee 31,514,660 enplanements, with an average growth rate of 2.93 percent per year (RITA, 2014). Additionally, EWR is among the core U.S. airports that are expected to make the largest upward movement in ranking of enplanements, going up two rankings by 2040 (FAA, 2014).

Twenty-five passenger carriers currently operate out of EWR and serve 160 non-stop destinations (Port Authority of NY and NJ, 2014). In 2013, United Airlines was the largest passenger carrier operating out of the airport, carrying 49.02 percent of passengers (RITA, 2014). Figure 2.25 highlights EWR's carrier shares for 2013. Currently, EWR serves as a hub for United Airlines and Federal Express.

Carrier Shares for January - December 2013

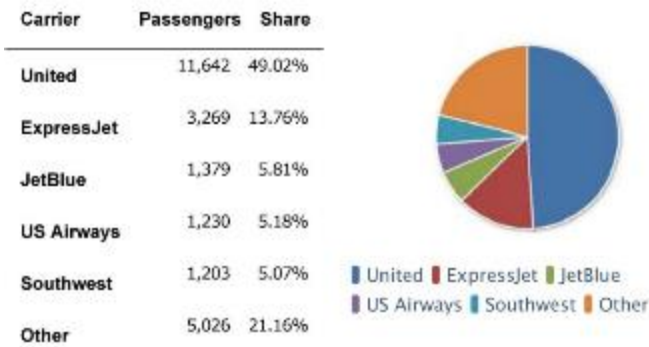


Figure 2.24: Carrier shares at EWR in 2013. Source: RITA

LaGuardia Airport (LGA)

History

LaGuardia Airport (LGA) is located in the borough of Queens in New York City and has been known by several different names throughout its history. It is conveniently situated just eight miles from midtown Manhattan. In 1939, New York City took over the airport and re-opened it as New York Municipal Airport-LaGuardia Field after substantial reconstruction. In total, NYC spent approximately \$40 million on improvements in order to better accommodate the rapid growth in commercial travel. In 1947, LGA was leased to the Port Authority of NY and NJ, and remains under the agency’s control today. To date, the Port Authority has invested a total of \$1.4 billion in airport improvements at LGA (Port Authority NY and NJ, 2014).

Airport Operations and Demand

LGA covers 680 acres and has four terminals consisting of 76 gates. Figure 2.26 provides a layout of the airport. Additionally, LGA has two runways that are both 7,000 feet long by 150 feet wide (Port Authority of NY and NJ, 2014). At this time, the airport is among the leading domestic gateways for business travel in the U.S., having served a total of 26,722,183 passengers in 2013. It continues to be the main business and short-haul airport for NYC (Port Authority of NY and NJ, 2014). In 2013, LGA had 13,381,725 enplanements, of which 12,545,500 (93.8 percent) were domestic and 836,225 (6.2 percent) were international. This translates to a total of 179,764 flight departures in 2013, of which 163,883 were domestic and only 15,881 were international (RITA, 2014). By 2040, LGA is expected to facilitate 17,376,436 enplanements (FAA, 2014), at a growth rate of 1.11 percent per year.

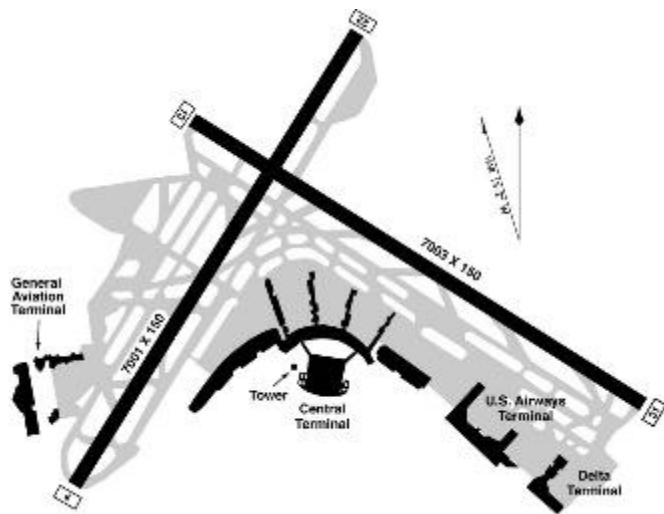


Figure 2.25: LaGuardia Airport layout. Source: FAA.

Currently, 22 passenger airlines serve LGA, with Delta carrying 21.53 percent of the airport’s passengers (RITA, 2014). Figure 2.27 highlights LGA’s carrier shares in 2013. LGA is a hub operation for Delta and a focus city for American Airlines.

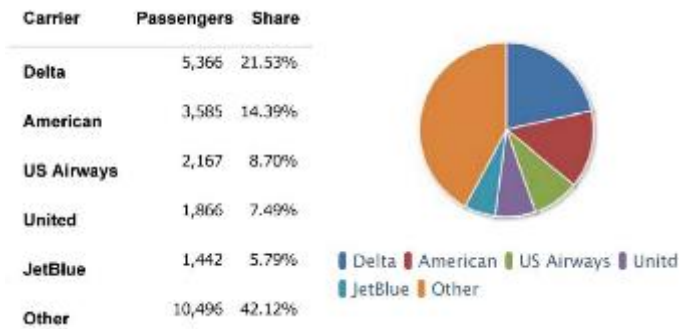


Figure 2.26: Carrier shares at LGA in 2013. Source: RITA.

John F. Kennedy International Airport (JFK)

History

Construction of John F. Kennedy International Airport (JFK), originally known as New York International Airport, began in 1942. It was built to relieve congestion at LaGuardia, which had already reached its maximum capacity. The airport, also located in the borough of Queens, took six years to complete and cost the City of New York approximately \$150 million to build (Port Authority of NY and NJ, 2014). JFK finally opened

its doors in 1948, located just 15 miles from midtown Manhattan. Around that same time, the Port Authority of NY and NJ took control of the airport and has operated the airport since then, investing an additional \$11 billion in improvements. In 1963, New York International airport was rededicated in memory of President John F. Kennedy, known thereafter as John F. Kennedy International Airport. At present, JFK airport is responsible for drawing roughly \$37 million in economic activity to the New York metropolitan area. In 2013, the airport served a record number of annual passengers – approximately 50.4 million – and has been recognized “for decades as the Premier U.S. gateway for passengers and cargo” (Port Authority of NY and NJ, 2014).

Airport Operations and Demand

Currently, JFK has more than 125 gates spread out across six terminals and has four runways. Figure 2.28 provides a layout of the airport, which covers 4,930 acres (Port Authority of NY and NJ, 2014). The function of JFK is split almost equally between international and domestic travel. In 2013, JFK facilitated a total of 25,102,233 enplanements, of which 13,001,641 (51.8 percent) were international and 12, 100,592 (48.2 percent) were domestic. This equates to a total of 190,662 flights departures, of which 116,868 were domestic and 73,794 were international (RITA, 2014). By 2014, the number of enplanements at JFK is expected to be in the vicinity of 43,795,100 (FAA, 2014), representing an average annual growth rate of 2.76 percent. It continues to be the busiest airport facility in the New York metropolitan area (Port Authority of NY and NJ, 2014).

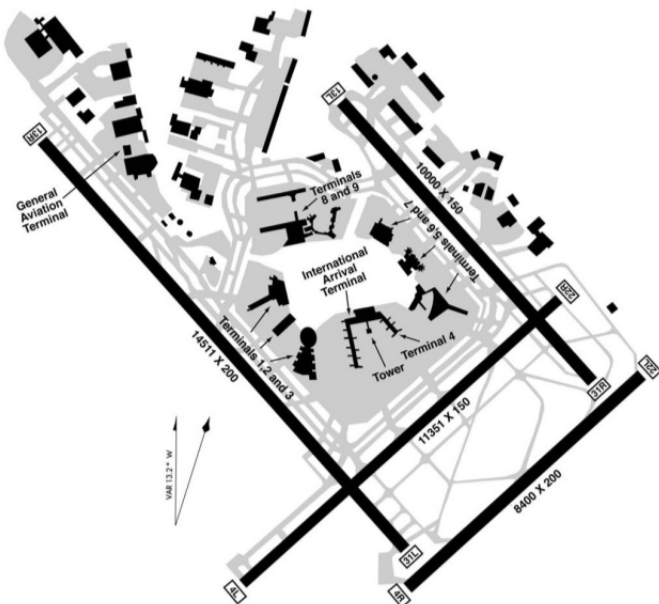


Figure 2.27: John F. Kennedy International Airport layout. Source: FAA.

JFK serves as a hub for JetBlue Airways and is also a major international hub for American Airlines and Delta. In total, over 21 passenger carriers serve the airport (RITA, 2014). Figure 2.29 highlights JFK's carrier shares in 2013.

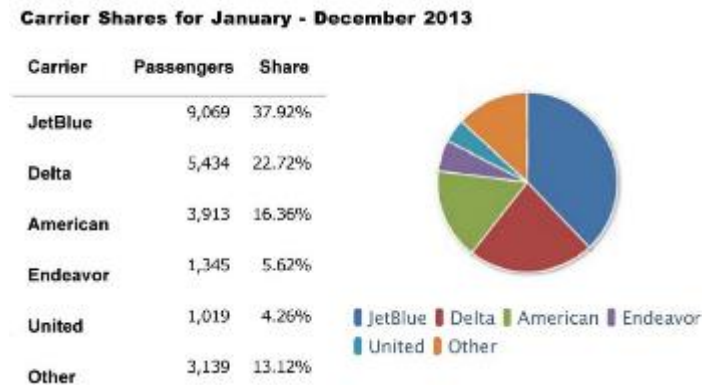


Figure 2. 28: Carrier shares at JFK in 2013. Source: RITA.

Dallas Metropolitan Area

Two major airports serve the Dallas metropolitan area: Dallas/Fort Worth International Airport (DFW) and Dallas Love Field Airport (DAL). DFW is 11 miles from DAL. These two airports collaborate to meet air traffic demand to and from the region.

Dallas/Fort Worth International Airport (DFW)

History

In 1964, the Civil Aeronautics Board determined that Dallas Love Field and Fort Worth Greater Southwest International Airport were inadequate for serving the projected future air traffic needs of the region. The Board directed the political leaders of both Dallas and Fort Worth to identify a common site mutually acceptable to both municipalities. The civic leaders of both cities agreed on an 18,000-acre parcel that was equidistant between the two cities. In 1968, construction of the \$700 million airport began (Texas State Historical Association, 2013).

In 1974, Dallas/Fort Worth International Airport (DFW) opened operations with the first flight being an arriving American Airlines flight for New York. A total of eight airlines started service at the airport that year. At the time, DFW had three runways and 56 gates. Braniff Airways was the largest carrier and flew 152 daily operations out of DFW. Figure 2.30 provides a current layout of the airport. In the 1980s, both American and Delta Airlines established hub operations at the airport, but Delta later relocated. Throughout the 1990s,

American and Delta controlled 90 percent of the air traffic at DFW (Texas State Historical Association, 2013).

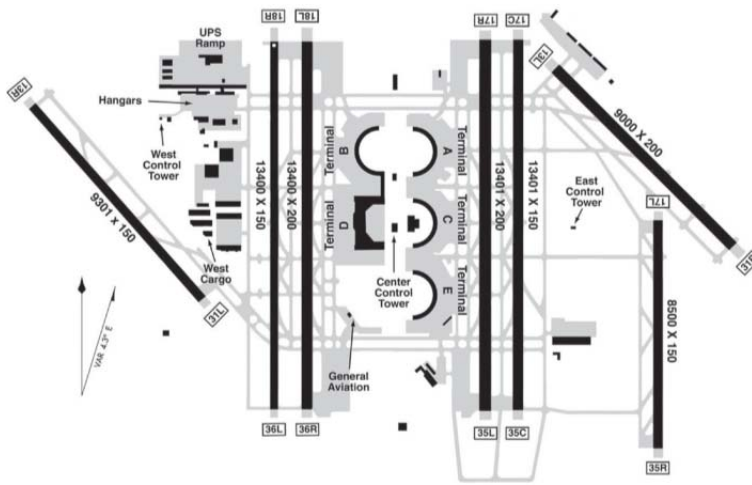


Figure 2.29: Dallas/Fort Worth International Airport layout. Source: FAA.

Airport Operations and Demand

Positioned at the mid-point between the cities of Dallas and Fort Worth, DFW International Airport is the fourth busiest in the world and is the home of American Airlines, the world’s largest airline in terms of passengers. Figure 2.31 provides a list of DFW carrier shares in 2013. Currently, DFW International Airport has 1,800 flights each day serving 60 million passengers a year. DFW International Airport provides nonstop service to 148 domestic and 59 international destinations worldwide.

Carrier Shares for January - December 2013



Figure 2.30: Carrier shares at DFW in 2013. Source: RITA.

In 1979, the Federal Government enacted the Wright Amendment. In essence, the Wright Amendment protected the domestic traffic at the newly completed DFW, which the Civil Aeronautics Board mandated. In October 2014, the Wright Amendment was fully repealed. Today, the competition is largely between American and Southwest, rather than between the two airports. More importantly, the repeal of the Wright Amendment prohibits international flights at Love Field; as a result, the international market represents the greatest growth potential for DFW (Aviation Online Magazine, 2012).

American's strategy states that American Airlines will connect Latin America with Asia and Europe, while DFW reaping the benefits. In line with this strategy, American initiated routes to Hong Kong and Shanghai in June. Additionally, DFW has recently announced that Qatar Airways will launch service between DFW and Doha, with Etihad Airways starting flights to Abu Dhabi. DFW leadership continues to press for a Chinese airline to start passenger service to DFW (Bureau of Transportation Statistics, 2014).

Dallas Love Field Airport (DAL)

History

Dallas Love Field Airport (DAL) is owned and operated by the City of Dallas Department of Aviation. It is named after Lieutenant Moss L. Love, who was killed during a training flight in 1913. The construction of the airport was a private venture and not mandated by the Civil Aeronautical Board. The inaugural flight for Love Field occurred in 1917. At that time, DAL was leased to the United States Army as an aeronautical training base. After World War I, DAL was returned to civilian service, and in 1927 the City of Dallas purchased 167 acres of the field. In 1927, DAL began regular passenger service. The City purchased additional land in 1927 and again in 1941, resulting in a total perimeter of 1,300 acres (Southwest Airlines, 2010).

Love Field was once again pushed into military service in 1942 and served as the headquarters for the United States Air Transport Command. Due to the expansions completed by the Army Corp of Engineers, Love Field was the largest airport in the entire southwest. With the increase in demand for air travel and transport, in 1968 the Civil Aeronautical Board (CAB) directed the Cities of Dallas and Fort Worth to identify a mutually agreed upon location for a new international airport. In an effort to safeguard the success of the new airport, the CAB worked to enact the Wright Amendment, which directed all domestic carriers to move to the new DFW Airport. Southwest refused, filed a lawsuit, and

prevailed. The ensuing compromise restricted Southwest Airlines to six states surrounding the state of Texas.

Airport Operations and Demand

DAL currently has three runways. In 2009, the City of Dallas spent \$519 million to replace the terminal buildings with a single terminal and a 20-gate concourse (FAA Master Records for DAL, 2008). In January 2014, the airport served 654,738 passengers. Figure 2.32 provides a current layout of the airport.

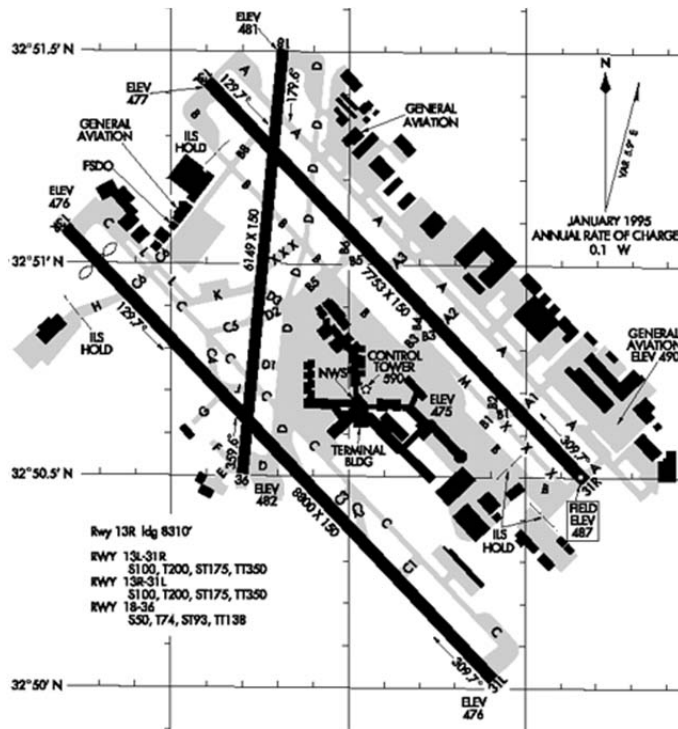


Figure 2.31: Dallas Love Field Airport layout.

In addition to Southwest, four other carriers currently serve Love Field. Figure 2.33 provides a list of carriers in 2013, which include Delta, SkyWest, SeaPort, and United Express.

Carrier Shares for January - December 2013



Figure 2.32: Carrier shares at DAL in 2013. Source: RITA.

Data Analysis and Results

Enplanement Capacity

In July 2014, the FAA released a report on airport capacity profiles, which provides a high-level assessment of current and future runway capacity. The report defines capacity as “the hourly throughput (departures and arrivals) that an airport’s runways are able to sustain during periods of high demand, represented as the range between the Air Traffic Control (ATC) rate and the model-estimated rate” (FAA Airport Capacity Profiles, 2014). According to this study, a comparison of capacity rates for operations at core airports indicates that SAN has the lowest capacity, with an hourly capacity rate of just 48-57 operations (including arrivals and departures) as shown in Table 2.2. Figure 2.34 below shows the range of capacity rates at core airports.

Region	Airport	Capacity Rate (hourly)
Southern California Area	SAN	48-57
	CLD	Not Available
	LAX	167-176
	SNA	49-68
	ONT	Not Available
Bay Area	SFO	100-110
	OAK	105-138
	SJC	Not Available
Chicago Area	ORD	214-225
	MDW	64-84
NY Area	JFK	90-93
	LGA	80-86
	EWR	94-100
Dallas Area	DFW	226-264
	DAL	Not Available

Table 2.2: Capacity profiles of other metropolitan areas served by multiple major airports. Source: RITA.

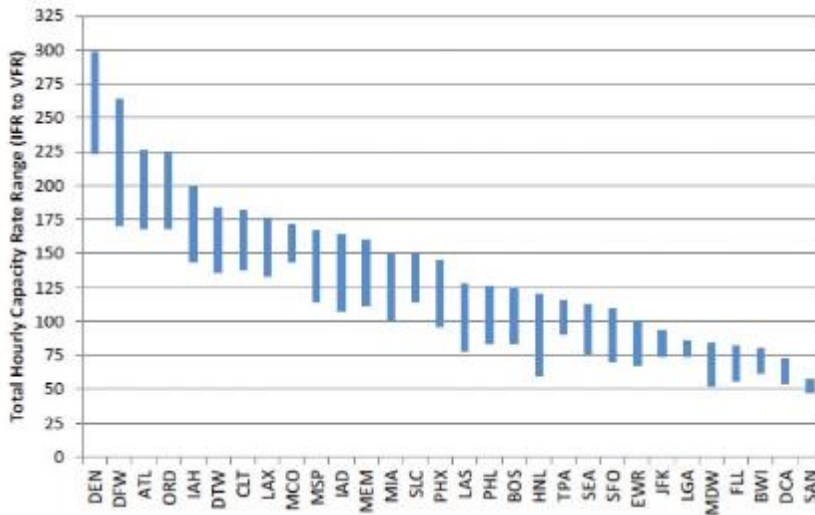


Figure 2.33: Range of capacity rates for current operations at core airports. Source: FAA.

SAN’s low capacity is a direct result of the airport’s single runway. Although SAN is expected to remain the busiest single-runway commercial airport in the U.S., it will be unable to expand or add additional runways due to lack of available land within the immediate vicinity of the airport. As highlighted by Figure 2.35, SAN is among the airports expected to require additional capacity by 2025, even after completed improvements (FAA,

2007). SNA and LGB will also require additional capacity. Currently, LAX is the only airport in Southern California expected to meet capacity after planned improvements.

Airports Needing Additional Capacity	After Planned Improvements	Without Planned Improvements
Boston Logan International (BOS)		♦
Charlotte Douglas International (CLT)		♦
Fort Lauderdale-Hollywood Int'l (FLL)	♦	♦
George Bush Intercontinental (IAH)		♦
Hartsfield-Jackson Atlanta Int'l (ATL)	♦	♦
John F. Kennedy International (JFK)	♦	♦
John Wayne-Orange County (SNA)	♦	♦
LaGuardia (LGA)	♦	♦
Long Beach-Daugherty Field (LGB)	♦	♦
Los Angeles International (LAX)		♦
McCarran International (LAS)	♦	♦
Metropolitan Oakland Int'l (OAK)	♦	♦
Midway Airport (MDW)	♦	♦
Minneapolis-St. Paul Int'l (MSP)		♦
Newark Liberty International (EWR)	♦	♦
O'Hare International (ORD)		♦
Palm Beach International (PBI)		♦
Philadelphia International (PHL)	♦	♦
Phoenix Sky Harbor International (PHX)	♦	♦
San Antonio International (SAT)		♦
San Diego International (SAN)	♦	♦
San Francisco International (SFO)	♦	♦
Seattle-Tacoma International (SEA)		♦
T.F. Green (PVD)		♦
Tucson International (TUS)		♦
Washington Dulles International (IAD)		♦
William P. Hobby (HOU)		♦
Total	14	27
Metropolitan Areas Needing Additional Capacity	After Planned Improvements	Without Planned Improvements
Atlanta	♦	♦
Charlotte		♦
Chicago		♦
Houston		♦
Las Vegas	♦	♦
Los Angeles	♦	♦
Minneapolis-St. Paul		♦
New York	♦	♦
Philadelphia	♦	♦
Phoenix	♦	♦
Seattle		♦
San Diego	♦	♦
San Francisco	♦	♦
South Florida		♦
Washington-Baltimore		♦
Total	8	15

Figure 2.34: Airports and metropolitan areas requiring additional capacity in 2025, with or without planned improvements. Source: FAA.

Figure 2.35 further highlights that both the Los Angeles and San Diego regions – and thus Southern California as a whole – will be unable to meet demand for air travel by 2040. Such data suggests that an additional international airport in the Tri-County region – with multiple, longer runways – will be necessary to meet future demand.

Air Traffic Patterns (Domestic vs. International)

In this section, air traffic patterns of 2013 enplanements (domestic versus international) are compared among other Southern California airports. The comparison indicates that SAN primarily serves domestic travelers, which comprise 96.3 percent of total enplanements. Only 3.7 percent of SAN’s enplanements are international. This number is similar to the number of international enplanements at other regional airports such as SNA and ONT. Like SAN, these airports also primarily serve domestic travelers, which comprise 95.7 percent and 98.6 percent of domestic enplanements, respectively (refer to Table 2.3). Based on study findings, LAX is the dominant international airport in Southern California with domestic travelers comprising 76.4 percent of enplanements and international travelers comprising 24.6 percent.

Region	Airport	No. Total Enplanements		
		2013 (M)*	Domestic	Intl.
Southern California Area	SAN	9.08	96.3%	3.7%
	CLD	0.05	100.0%	0.0%
	LAX	33.09	73.6%	26.4%
	SNA	4.58	95.7%	4.3%
	ONT	2.00	98.6%	1.4%
Bay Area	LGB	1.44	100.0%	0.0%
	SFO	21.84	78.4%	21.6%
	OAK	4.97	98.4%	1.6%
Chicago Area	SJC	4.44	96.4%	3.6%
	ORD	32.53	83.6%	16.4%
NY Area	MDW	10.41	97.5%	2.5%
	JFK	25.10	48.2%	51.8%
Dallas Area	LGA	13.38	93.8%	6.2%
	EWR	17.59	68.1%	31.9%
	DFW	29.24	89.0%	11.0%
Average	DAL	4.36	99.9%	0.1%
		13.38	89%	11%

Table 2.3: Percentage of domestic and international enplanements in 2013. Source : RITA.

As indicated by the benchmark analysis of other major U.S. metropolitan areas, each of the areas examined has more than one major airport serving air traffic demand to and from its geographical reach. For example, in the New York metropolitan area, both JFK and EWR – which are 21 miles apart – serve a much larger percentage of international passengers (51.8 percent and 31.9 percent, respectively) than do airports within Southern California.

Considering the proximity of LAX to SAN – a lengthy 109-mile journey for weary travelers – building a proposed international airport roughly halfway in between would shorten the distance, as well as travel time, to a major international airport. Furthermore, the proposed international airport in Oceanside would provide greater accessibility to the region. Such improved accessibility would ensure that the area is even more attractive and convenient for potential international travelers to get to, thereby increasing travel to the region.

The benchmark study also suggests that there is a missed opportunity for the Tri-County region. Given the limited international air travel options provided by the Southern California airport system, international travelers to the region are forced to board a connecting flight at LAX first, rather than travel directly to San Diego. Currently, 3.7 percent of enplanements at SAN are international. Out of all benchmarked metropolitan airports, the average percentage of international enplanements is 11 percent, which is almost three times as many enplanements currently facilitated at SAN (refer to Table 2.2). From this, it

can be deduced that the proposed international airport in Oceanside could potentially increase the number of international travelers to the San Diego area by a minimum of 7.3 percent (average of 11 percent minus the percentage of international enplanements, currently at 3.7 percent).

Enplanements per Flight (Domestic vs. International)

In this section, the total enplanements per flight are compared to determine the aircraft size capacity for each airport. The number of enplanements per flight was calculated by dividing the number of enplanements per flight (number of people onboard an outbound aircraft) by the number of flights in 2013, for both domestic and international flights. Table 2.4 highlights these calculations. On average, domestic departures from SAN carry 110 passengers per flight. This number is larger than the average count per flight of 94 passengers. Compared with other major international airports such as LAX, SFO, and JFK (104, 102, and 104 respectively), the number of passengers that flights out of SAN can carry is higher than that of other airports. This suggests that SAN’s domestic flights are approaching maximum passenger occupancy per aircraft. Figure 2.36 provides the number of enplanements per flight across other major metropolitan airports.

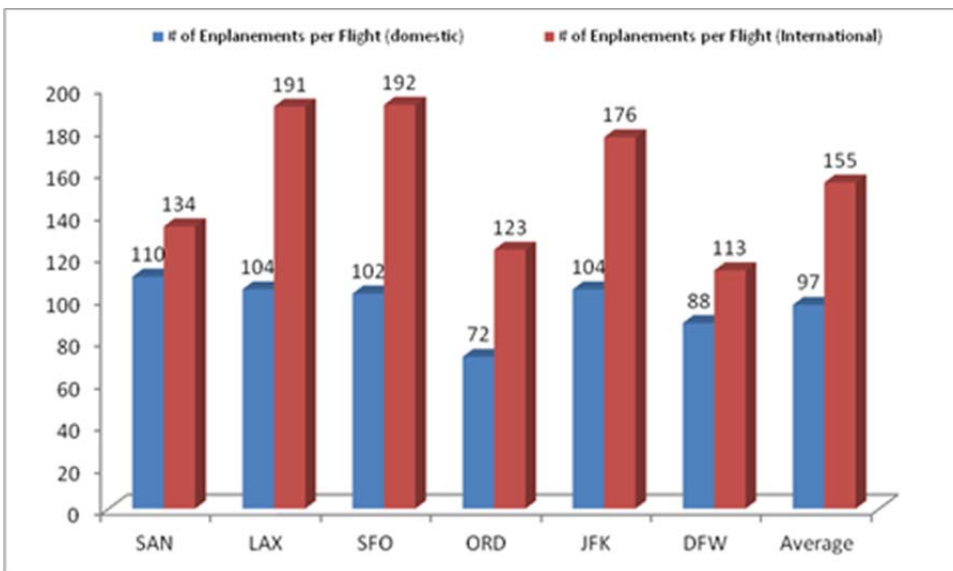


Figure 2.35: Number of enplanements per flight across major international airports.

In contrast, the number of enplanements per flight for international flights at SAN is 134, which is much lower than other major international airports such as LAX, SFO and JFK (191, 192, and 176, respectively). Such data suggest that the carrying capacities of SAN’s

outbound aircrafts are limited due to smaller aircraft size. This is a direct result of SAN's relatively short, single runway, which cannot accommodate larger aircrafts.

The benchmark study also indicates that a new international airport within the Tri-County region would increase enplanement capacity, which SAN is currently missing out on. A larger number of passengers per flight would actually improve efficiency by increasing the overall ratio of passengers to total flights. This potentially translates into higher revenues per flight given that international flight prices are often higher than domestic flight prices.

Ratio of Total Enplanements (Against Metropolitan Area Population)

Region	Airport	No. Enplanements per Flight (Domestic)	No. Enplanements per Flight (International)
Southern California Area	SAN	110	134
	CLD	20	-
	LAX	104	191
	SNA	111	102
	ONT	93	112
	LGB	107	-
Bay Area	SFO	102	192
	OAK	104	122
	SJC	99	130
Chicago Area	ORD	72	123
	MDW	112	75
NY Area	JFK	104	176
	LGA	77	53
	EWR	82	125
Dallas Area	DFW	88	113
	DAL	92	-
Average		92	127

Table 2.4: Comparison of the number of enplanements per flight by airport, including domestic and international flights.

In this section, the numbers of enplanements at each airport and within each metropolitan area are measured against the local metropolitan population. The ratio of enplanements is calculated by dividing the number of total enplanements in 2013 by the estimated metropolitan population (United States Census Bureau, 2014). Table 2.5 displays the resulting ratios for all airports and metropolitan areas examined in this study.

Region	Airport	Estimated Population 2013 (Millions)	Ratio of Enplanements By Airport	Total Ratio of Enplanements By Metro Area
Southern California Area	SAN	3.21	2.83	2.84
	CLD	Tri-County: 2.21	0.02	3.13
	LAX	13.13	2.52	
	SNA		0.35	
	ONT		0.15	
LGB	0.11			
Bay Area	SFO	6.44	3.39	4.86
	OAK		0.77	
	SJC		0.69	
Chicago Area	ORD	9.54	3.41	4.50
	MDW		1.09	
NY Area	JFK	19.95	1.26	2.81
	LGA		0.67	
	EWR		0.88	
Dallas Area	DFW	6.81	4.29	4.93
	DAL		0.64	
Average		9.85	1.44	3.85

Table 2.5: Ratio of the total enplanements against the metropolitan area population.

As the above table indicates, SAN has 2.83 enplanements per person within the San Diego metropolitan area. This number is much lower than the ratio of enplanements at other major international airports, including SFO, ORD, and DFW (3.39, 3.41, and 4.29, respectively). Such data indicate that SFO, ORD, and DFW transport more passengers from their respective geographic regions than does SAN. However, these findings could be attributed to a greater number of passengers per flight, since larger airports can accommodate higher-capacity aircrafts.

In contrast, Table 2.5 indicates that the New York metropolitan area is the exception to this pattern with a combined ratio of only 2.81 enplanements per person, compared to a ratio of 2.85 within the Tri-County region. However, other major metropolitan areas such as the Bay Area, Chicago, and Dallas currently enplane more passengers when measured against the local population. This suggests that SAN's enplanement capacity is limited and that the proposed international airport could potentially increase the enplanement ratios within the region.

Currently, CLD and SAN are the only two airports located within the San Diego metropolitan area. Since CLD’s enplanement capacity is nominal (with an enplanement ratio of just 0.02), SAN is – for all intents and purposes – the only airport operating within the San Diego metropolitan area. Figure 2.37 highlights the ratios of total enplanements within each metropolitan area.

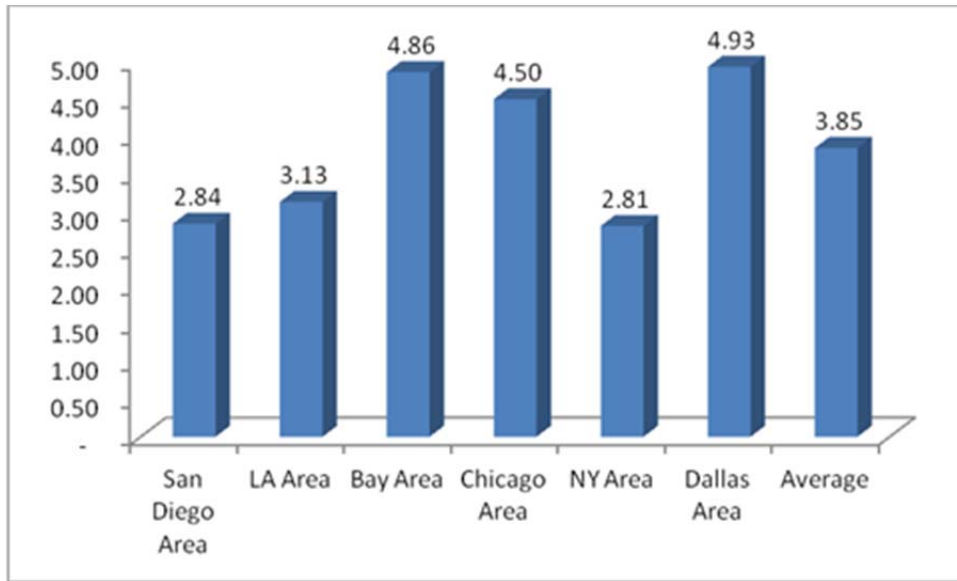


Figure 2.36: Ratio of total enplanements against the metropolitan area population.

Air Traffic Projections

In this section, the projected enplanements are compared. Projected enplanement data are based on past enplanement trends and were obtained from the FAA’s Office of Aviation Policy and Plans (APO) Terminal Forecast website. The selected range for data collection was 1990 through 2040. The year 1990 was selected because it provides a 25-year look back; similarly, 2040 is 25 years into the future.

Figure 2.38 highlights the projected number of SAN enplanements to 2040, broken out into domestic and international. (See Appendix for projected 2040 enplanements of other airports included in this study). According to these projections, the projected number of enplanements at SAN in 2040 will be roughly 15 million, which equates to six million more enplanements than the airport is currently facilitating. This represents a growth rate of 2.5 percent year on year.

SAN—SAN DIEGO INTL
Data: Enplanements

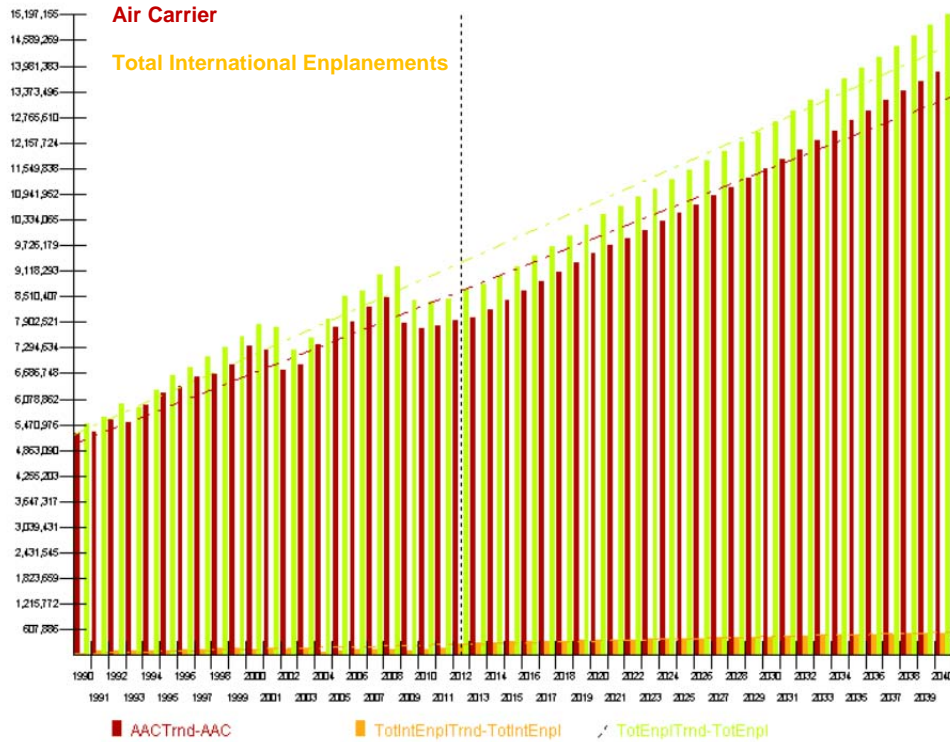


Figure 2.37: SAN enplanements forecast (Domestic and International). Source: FAA.

Other regional airports in Southern California also show a similar growth trend, as highlighted in Figure 2.39. Among the airports examined in this study, LAX is projected to have the largest number of enplanements at 53.6 million by 2040. Based on growth projections of all airports within Southern California (SAN, CLD, LAX, SNA, ONT, and LGB), the total number of enplanements is expected to be 82,619,223 by 2040, up from 50,245,811 in 2013. With such a sharp increase in annual enplanements across all regional airports within Southern California, the data indicates that an additional airport in the Tri-County region will be necessary to meet the projected demand.

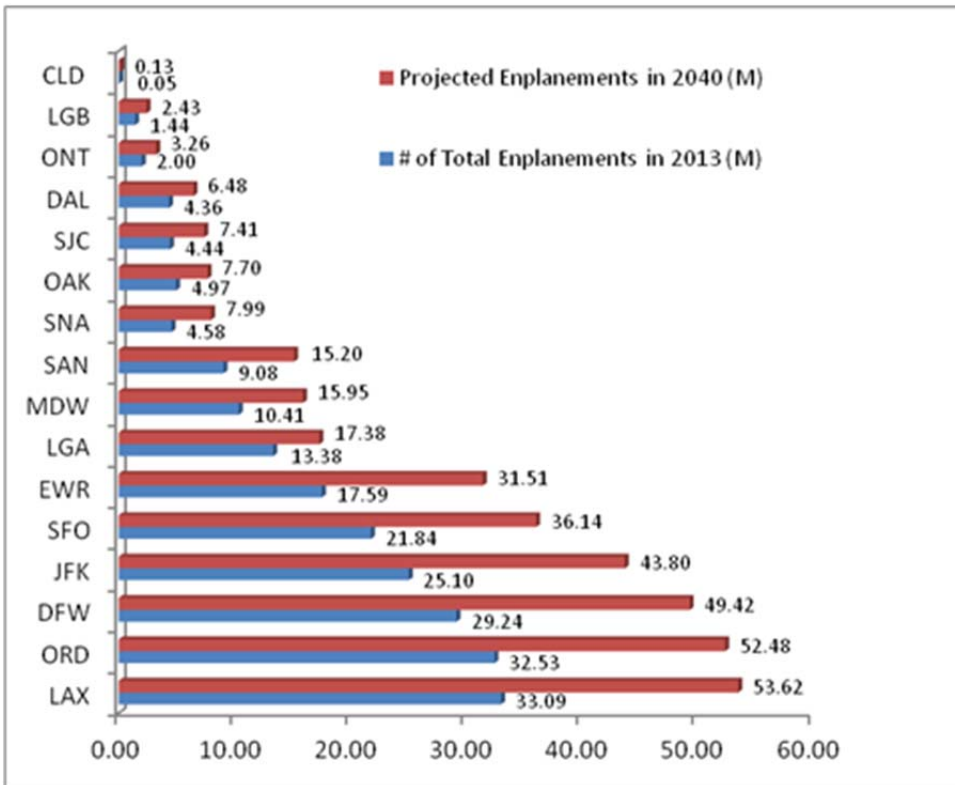


Figure 2. 38: Enplanements forecast for benchmarked airports, including domestic and international. Source: FAA.

Table 2.6 shows the average projected growth rate of each airport from 2013 to 2040. SAN has a growth rate of 2.5 percent, which is the same as the average growth rate of all the benchmarked airports. However, by comparing other domestic regional airports such as OAK, MDW, LGA and DAL (2.0 percent, 2.0 percent, 1.1 percent, and 1.8 percent respectively), it can be determined that SAN has a much higher growth rate than those airports. Although SAN mainly serves the domestic market, the growth rate suggests that SAN will grow much faster than other domestic airports.

In addition, CLD has the highest growth rate of 5.7 percent. Although CLD is a much smaller airport in comparison to the other airports studied, it has the highest growth rate. This suggests that there is increase in air traffic demand in the North County area. Additionally, all of the other regional airports serving Southern California have high growth rates compared with other regional airports in other major metropolitan areas. SNA, LGB, SAN, and CLD have equal or higher growth rates than the average rate of 2.5 percent. Such data further emphasizes the need for a new airport in North San Diego County.

Region	Airport	Average Growth Rate 2013 – 2040
Southern California Area	SAN	2.5%
	CLD	5.7%
	LAX	2.3%
	SNA	2.8%
	ONT	2.3%
	LGB	2.5%
Bay Area	SFO	2.4%
	OAK	2.0%
	SJC	2.5%
Chicago Area	ORD	2.3%
	MDW	2.0%
NY Area	JFK	2.8%
	LGA	1.1%
	EWR	2.9%
Dallas Area	DFW	2.6%
	DAL	1.8%
Average		2.5%

Table 2.6: Comparison of projected enplanement growth rates between 2013-2040.

Conclusions

The first phase of this study examines how existing airports in Southern California are currently serving air traffic demand to and from the region and how they will serve projected demand in the future. The regional airports included in this study are SAN, CLD, LAX, LGB, SNA, and ONT, all of which are within a 90-mile radius (or 90-minute drive) from the location of the proposed international airport in Oceanside. The second phase of this study includes a benchmark analysis of four other major U.S. metropolitan areas served by multiple airports, including San Francisco, New York, Dallas, and Chicago. This phase examines how multiple airports serving the same metropolitan area either collaborate or compete to meet air traffic needs. Findings from these areas were then compared against the Tri-County region.

With SAN expected to reach capacity between 2030 and 2035, it has been proposed that an additional international airport be constructed at the designated location in Oceanside. The benchmarked data was used to analyze current Enplanement Capacity, Air Traffic Patterns (Domestic vs. International), and Enplanements per Flight, and Ratio of Total Enplanements (Against Metropolitan Area Population) against SAN. Enplanement projections to 2040 were also compared.

Results of the benchmark analysis indicate that SAN is capacity-constrained. This is due to the limitations of a short, single runway. All other benchmarked airports, including other regional airports with lower enplanements per year than SAN, have a minimum of two runways. The current hourly capacity rate at SAN, including departures and arrivals, is the lowest among all airports examined in this study. SAN's capacity will remain low unless a second runway is added. Unfortunately, such an addition is not feasible due to limited land availability. Furthermore, other regional airports, such as SNA and LGB, will need additional capacity by 2025 even with planned expansions (FAA, 2007).

At present, SAN predominantly serves the domestic travel market, unlike other major airports in the U.S. A primary reason for this is that SAN operates with a shorter, single runway. As a result, SAN is limited in its ability to accommodate larger aircraft. This is highlighted by SAN's lower international enplanements per flight. Such a low number suggests SAN has a limited capacity to operate larger aircrafts. The proposed international airport – with multiple and longer runways – will serve to increase the region's air traffic capacity.

Furthermore, SAN's low ratio of total enplanements against the surrounding metropolitan population indicates a missed opportunity for the region. As such, the addition of a higher-capacity airport within the Tri-County region has the potential to improve the region's accessibility, thereby making it even more attractive and convenient for potential visitors.

Finally, the projected 2040 enplanements indicate that SAN and other airports within Southern California (namely SNA and CLD) will experience the fastest growth rates. Projected growth rates suggest the imminent need for additional air capacity within the region. Based on study findings, the proposed international airport will supplement the existing airport system in Southern California and work collaboratively with other airports. SAN will continue to primarily serve the domestic travel market, while the new international airport – with larger facilities and multiple runways – will help alleviate the heavy burden placed on LAX to satisfy the region's international travel demand. Even more importantly, the location of the proposed airport in Oceanside will provide a substantial growth opportunity in terms of direct air traffic to and from the San Diego area, thereby positioning North San Diego County at the center of the Tri-County region.

CHAPTER 3: GROUND TRANSPORTATION

Introduction

Southern California International Airport will affect automobile traffic in the surrounding areas, particularly along Interstate 5, Interstate 15, and Highways 76 and 78. Portions of these roadways are already congested and many worry that the addition of a new airport will only exacerbate the problem. In addition to automobile traffic, the increased demand for public transportation serving the airport needs to be considered. The accompanying environmental effects of increased public and private transportation also need to be addressed, as well as additional parking infrastructure to accommodate the traveling population. Private vehicles will require parking at or near the airport. Travelers utilizing public transportation will need parking solutions at public transportation hubs so they can park their vehicles and reach the airport by bus or rail.

This chapter examines the anticipated traffic to SCIA and offers sustainable solutions for managing it. The goal is to identify current public and private transportation infrastructure and to identify how its various existing elements, and potential new elements, can be systematically linked to maximize transportation efficiency while minimizing negative traffic and environmental effects.

This report projects automobile traffic and demand for public transportation and parking to serve SCIA when it operates at maximum capacity. This will be accomplished by comparing projected future traffic with the projected future capacity for private and public transportation in the region, taking into account currently scheduled expansion plans.

The analysis examines existing plans to expand private and public transportation within the region. It analyses of all Department of Transportation projects slated to expand highways and interstates to alleviate traffic congestion. It also examines all current plans to expand public transportation routes near SCIA. The report discusses the sufficiency of current public and private infrastructure needed to handle projected traffic and offers recommendations for further infrastructure development.

Research Questions

This report is divided into three sections with separate research questions relating to private transportation including personal vehicles, taxis, and shuttles; public transportation including buses and rails; and parking infrastructure for personal vehicles

parking either directly at SCIA or parking elsewhere with the intent to board public transportation traveling to SCIA. The research questions are as follows:

1. Considering the existing plans to expand Interstate 5, Interstate 15, State Route 76, and State Route 78, what additional plans should be scheduled to meet demand in the Tri-County region?
2. What portion of airport passengers will require or prefer public transportation options, and which public transportation options will be appropriate to handle the increase in demand?
3. With the expansion of private and public transportation in the area, how many passengers will require parking solutions whether arriving at SCIA through private transportation, or parking at public transportation transit centers?

Scope and Limitations

SANDAG, Caltrans, and other various transportation sources provided data regarding current usage for both private and public transportation. However, forecasted data for public transportation was forecasted to 2030 rather than 2040. The growth rate through 2030 was used to project expected demand for public transportation by 2040.

In regards to private transportation, the number of passengers expected to use the COASTER and Metrolink in 2040 was not projected, rather the number of round trips in 2040 was forecasted. This report therefore calculated expected passenger capacity for the COASTER, Metrolink and Pacific Surfliner by multiplying the number of forecasted round trips by the number of seats available per trip.

North County Transit District's SPRINTER is expected to operate every ten minutes in 2040, where it is currently operating every 30 minutes. Although data is not provided on the expected number of round trips for SPRINTER in 2040, the increase in operations implies the number of passengers could triple after 2030. Unreturned messages were left with various contacts at SANDAG to try and gather missing transportation data.

Lastly, data was unavailable referencing where SAN's originating passengers were traveling from. To conservatively estimate the impact on public and private transportation, this report investigated the highest forecasted impact to each transportation route.

Methodology

This report relied on secondary research to examine transportation needs for the Tri-County region when SCIA operates at a capacity of 30 million passengers. The North

Coast Corridor Public Works Plan & Transportation and Resource Enhance Program Report (NCC PWP/TREP) issued by the California Coastal Commission in July 2014 served as the main source for addressing planned freeway and railway expansions as well as the environmental concerns arising from transportation expansions.

California's Department of Transportation (Caltrans) and San Diego Association of Governments (SANDAG) were used to determine current and forecasted demand for transportation within the Tri-County region. Caltrans and SANDAG use variables such as population, income, and unemployment rates in their model when determining the projected demand for transportation.

For private transportation, this report used data from several public agency sources to construct a model of traffic to and from SCIA. Data from the Caltrans and SANDAG was used to determine whether the existing plans to expand highways and interstates will be sufficient to handle, or if additional construction is required.

Within the Tri-County region, current demand and capacity for public transportation, proposed public transportation expansions, and future demand for public transportation data was gathered from North County Transit District (NCTD), Metrolink, the California Coastal Commission, and Caltrans. Secondary data from the San Diego International Airport and Los Angeles International Airport were also used to determine the portion of passengers who will use public transportation.

To determine parking infrastructure demand related to SCIA, this report used the 2013 EAS Report that calculated the needs for parking based on passengers at SAN. Additionally, the parking needs at LAX was used to construct projected demand for SCIA. Lastly, demand for parking was estimated using the 2013 EAS Report as a benchmark for parking needs based on volume and passengers of SAN. In addition, parking needs for LAX was used to estimate demand.

Private Transportation

Introduction

Private vehicle travel is chosen by 98% of originating passengers arriving at LAX or SAN (Malcolm Pirnie, 2008). While it is difficult to project whether there will be significant changes in the transportation modes in the future, it is reasonable to expect that in 25 years, many Californians will still choose to travel by automobile. Therefore, preparing adequate

road infrastructure through interstates, highways, and arterial roads to accommodate vehicular traffic will be crucial to the operations of SCIA.

The main thoroughfares for private vehicles accessing SCIA include State Route 76 (SR-76), Interstate 5 (I-5), State Route 78 (SR-78), and Interstate 15 (I-15). SR- 76 is the only main thoroughfare which would provide direct access to SCIA. The other main thoroughfares would only connect to SCIA by either connecting to SR-76 or to an arterial roads. Four arterial roads play a vital role in connecting passengers to SCIA. Their role will be to traverse the interior roads running off of major routes and include El Camino Real (ECR), Mission Avenue, Benet Road, and Pacific Coast Highway (PCH). Table 3.1 shows each route and how it will service passengers in accessing the proposed airport site. In addition, Table 3.1 indicates secondary routes that may be substituted by travelers.

Arterial Roads				
Name	Connection/Purpose	Miles	Lanes	Secondary Route
El Camino Real (ECR)	Connects SR-78 to SR-76 through Mission Ave. Runs parallel of I-5; north to south	3.2	6 (South) 4 (North)	Pacific Coast Highway
Mission Avenue - A	Connects ECR to SR-76	1.0	4	
Mission Avenue - B	Connects I-5 to PCH. Runs through downtown to allow access to Oceanside Transit Center [or terminal connection station].	0.6	4	
Benet Road*	Connects SR-76 to Proposed Airport Terminal Site	1.1	2	Foussat Road
Pacific Coast Highway (PCH)	Connects end of SR-78 to North Oceanside. Runs parallel to I-5 and provides access to Oceanside Transit Center [or terminal connection station].	2	2 (South) 2 (North)	I-5
Foussat Road*	Connects SR-76 to SCIA Terminal Site	1.9	2	Benet Road

* - Requires new roads be built on portion of defined route

Table 3.1: Alternate roads to proposed airport.

Each of the main routes, freeways and highways will be discussed in order of nearest to furthest from SCIA. Correspondingly, arterial roads will be discussed as they relate to each main route within their respective subsection.

State Route 76

Current Traffic Conditions

State Route 76 (SR-76) runs east-west for 53 miles starting in Oceanside at the I-5, passing through I-15 Pala and Pauma Valley, and ends at SR-79. The portion that directly relates to SCIA lies between the I-5 and I-15. Within the Tri-County region, SR-76 runs through the city of Oceanside and the unincorporated community of Bonsall. This area spans just over 20 miles and includes a recently upgraded four-lane expressway from I-5 to South Mission Road and a two-lane highway from South Mission Road to I-15. The current average traffic volume on SR-76 is approximately 30,000 average daily trips. This is expected to double to 60,000 by the year 2030 (California Department of Transportation, 2011). This is partly due to the projected population and employment growth rates. Per the 2050 Regional Transportation plan, Oceanside's projected population and employment growth rates are expected to increase 22% and 54% respectively, by 2050 (SANDAG, 2011).

In order to accommodate the projected increases, there have been several improvements completed on SR-76. These improvements are broken out by segment: West, Middle, and East. The western segment falls within the city of Oceanside between the I-5 and Melrose Drive; in 1999 this section was widened from a two-lane highway to a four-lane expressway. The middle segment is located between Melrose Drive and South Mission Road. The widening of this segment of SR-76 to a four-lane expressway was completed in 2012. Additional improvements in the middle segment include installing signalized and full access intersections to improve roadway functionality, adding a new two-lane bridge over the San Luis Rey River for eastbound traffic, reconfiguring the existing San Luis River Bridge for westbound traffic, and replacing both Bonsall Creek and Ostrich Farm Creek Bridges (TransNet, 2013).

Planned Development and Growth

Traffic volumes along SR-76 are expected to double by 2030 to 60,000 daily trips. Using the same projected growth rate for 2030, the 2040 traffic volumes could be as high as 100,000 daily trips. Traffic problems related to the current growth projections should be mitigated by completing the last segment of the SR-76 expansion project. The last segment, called the East segment, is divided into three phases. The first phase upgraded the SR-76/I-15 interchange to include an additional eastbound lane. In addition, two new loop on-ramps were built for easier access to I-15 (TransNet, 2013). The second and third phases began

construction in October 2014 to widen SR-76 into a four-lane highway from South Mission Road to the newly upgraded I-15 interchange (TransNet, 2013). The final phases of the East segment are expected to be completed by 2017. When finished, the whole expansion project will provide a consistent four-lane highway for the Tri-County region that will alleviate difficulties related to current and future projected traffic volumes.

SCIA will have a sizeable impact on SR-76 relative to current traffic volumes. Based on the location of SCIA, SR-76 would be the only east-west highway that would provide access to the airport. Although the current and planned expansions along SR-76 are projected to meet an increase in traffic volume of 60,000 daily trips in 2030, these expansions might not be able to support the additional demand created from the new airport.

SCIA is projected to serve 30M passengers. In order to calculate the expected increase in traffic volumes the new airport will create, an average of originating passengers between SAN and LAX was used (see Table 3.2). In 2008, SAN had 17.7M passengers visit the airport. Of those passengers, 8.4 million (47%) originated from San Diego using either private or public transportation (Malcolm Pirnie, 2008). Of the 67M passengers that traveled through LAX in 2011, 62% originated from the LA area (UNISON Consulting, 2012). Using 55% as the average of these figures, SCIA will create an increase of 16.4 million passengers a year, or 45,000 daily trips to the area. Currently, 98% of the airport traffic is coming from private transportation versus just 2% from public (see Table 3.2). Per the SANDAG 2050 Regional Transportation Plan (RTP), future expansions on public transportation are expected to increase ridership as a way to decrease congestion on major highways. By making public transportation a more attractive alternative, we are anticipating public transportation to increase from 2% to 10%. Therefore, the projected traffic volumes for private transportation would increase by 40,000 average daily trips, while public transportation would increase by 4,500 passengers.

Current SAN/LAX Passengers	LAX	SAN
Number of passengers (2013)	66,667,619	17,710,241
Originating Passengers	62.0%	47.2%
Average % Originating Passengers	55.0%	
Private Transportation	97.0%	98.8%
Public Transportation	3.0%	1.2%
Average % Private Transportation	97.9%	

SCIA Projected traffic increase	Anticipated Transportation %	2040
Number of Passenger at new airport		30,000,000
AVERAGE LAX & SAN Originating Passengers		54.6%
Projected Private Transportation (per day)	90.0%	40,396
Projected Public Transportation (per day)	10.0%	4,488
TOTAL Increase		44,884

Table 3.2: Projected traffic increase.

Adding this to the projected traffic volume of 100,000 based on population increase creates a forecast of 140,000 daily trips in 2040. However, most airport traffic will traverse only a section of SR-76, predominantly the portion between I-5 and the proposed airport.

Although this is a large increase relative to SR-76's current projected traffic volume, the current and future expansions of SR-76 to a four-lane highway will alleviate possible congestion from the new airport. Other possible expansions to be considered to meet the demand for SCIA include adding a high occupancy vehicle (HOV) lane and implementing rapid bus transit (BRT). These are high frequency, limited stop transit services that utilize express lanes on the highway (TransNet, 2014). I-15 recently incorporated the new BRT system with positive results, and the I-5 expansion plans on implementing the BRT system as well.

Arterial Road Access to and from SR-76

In addition to the increase in highway traffic, arterial roads require consideration. Referencing Table 3.1, there are three arterial roads off SR-76 that will be affected. Two of them, Foussat and Benet, will be the main access points into SCIA. These roads are not considered optimal main access points into an international airport, since they run through residential neighborhoods. One possible solution is to extend Benet and Foussat Road around the neighborhoods therefore bypassing residential complaints. These roads should

be widened and extended to meet the demand of the new airport as they would be essential to private transportation access.

Interstate 5

Current Traffic Conditions

Interstate 5 (I-5) will allow SCIA passengers to travel south from Orange County and north from San Diego County, to SR-76. The amount of airport traffic will increase as it approaches SR-76, and the I-5 to SR-76 junction will have the most congestion.

For clarity, when discussing the improvements required, the segment of I-5 passing through Orange County will be called “OC Section,” for Orange County. The segment of I-5 through the Coastal Corridor of Northern San Diego County will be referred to as the “NCC Section.”

The OC section is comprised of 32 miles of I-5 running from North Harbor Drive/South Camp Pendleton in Oceanside up to the I-405/I-5 split just south of Irvine, CA. In 2012, there were 267,000 daily trips on this section (California Department of Transportation – District 12 [CA DOT D12], 2012); See Appendix C.2. However, 18.5 miles of this section run thru Camp Pendleton and have minimal traffic access on and off the interstate. With so few entry-and exit points along this segment and no commercial or residential activity, the immediate traffic impact within the OC section will be minimized. Still, the OC section services many commuter and private vehicle drivers. The route is primarily made up of three general-purpose lanes with portions of the OC section including four general purposes lanes, four plus one high occupancy vehicle (HOV) or carpool lane, and a few miles with four plus two carpool lanes.

The NCC section runs 27 miles along San Diego’s coastline from La Jolla to North Oceanside and spans six miles inland. Its I-5 route runs from La Jolla Village Drive in San Diego to Harbor Drive in Oceanside and contains eight general-purpose lanes (four northbound and four southbound). The southern portion (north of I-5/I-805 merge in San Diego to south of Manchester Avenue in Encinitas) also includes HOV lanes in each direction. Within the NCC, I-5 serves as the primary transportation corridor with more than 700,000 daily trips (Caltrans & SANDAG, 2014).

The areas surrounding each section of I-5 are expected to experience substantial population growth by 2040 with 30% (CA DOT D12, 2012) growth in OC and 23% (Caltrans & SANDAG, 2014) in NCC. Such population growth is expected to changes the daily trip

values from 267,000 to 325,000 along the OC section, and from 700,000 to 910,000, along the NCC section.

To tackle expected growth within both OC and NCC sections, government agencies have made several plans and proposals over the last four years. These plans range from adding HOV lanes, increasing public transposition, building more park and rides as well as new pedestrian and bike paths.

The OC section, run by District 12 of the California Department of Transportation, is addressing this issue by adding at least one HOV lane along the entire 20.5-mile route north of Camp Pendleton, north through the SR-73-I-405 split. This will be accomplished through widening the highway and access ramps where HOV lanes do not currently exist. The project began in 2012 and is expected to last through 2022. It has been designed to curb congestion and accommodate growth needs through 2045.

In June of 2010, NCC PWP/TREP began releasing project proposals and outlines to the public. The result of their commission is a plan to be implemented over the next 30-to-40 years that includes widening I-5 to accommodate four new Express Lanes, double tracking of the Los Angeles-San Diego-San Luis Obispo rail corridor (LOSSAN), enhancing bus transit service, as well as pedestrian and bike paths.

The plan is to create an “8+4” system; this includes eight general-purpose lanes and four Express Lanes. The NCC PWP/TREP’s report states that this highway alternative was selected as it represents the smallest footprint analyzed that could still achieve the travel improvement goals set forth for the project. In addition, this alternative was highly desirable as it is endorsed as the appropriate highway alternative model in SB 468.1.

By pursuing a project that adds more lanes on an existing freeway NCC PWP/TREP sets forth some challenges and great opportunities. With four general purposes lanes already heading both northbound and southbound, the main infrastructure addition is that of two HOV or Express Lanes on each side of the freeway. As HOV lanes are added, access to

¹ Senate Bill 468 (SB 468) is the result of a collaborative effort involving SANDAG, Caltrans, and the California Coastal Commission to ensure project design and mitigation measures are included in the NCC PWP to address coastal public access, habitat restoration projects, environmental concerns, and community enhancements. Additionally, SB 468 requires that SANDAG and Caltrans be limited to nothing larger than an 8+4 alternative, and states that all fees collected from single occupancy vehicles (SOVs) utilizing the Express lanes be used toward funding future transit service and operations in the NCC (Caltrans, & SANDAG, 2014).

them will need to be considered. NCC PWP/TREP's plan also addresses that concern through the installation of two Direct Access Ramps (DARs) and Intermediate Access Points (IAPs) so that HOV lane travelers will have easy access on and off I-5; DARs are ramps allowing entrance on and off directly to and from HOV lanes in the center of the freeway and IAPs are lanes that transition access from general purpose lanes into HOVs to help avoid congestion for cars getting in and out of HOV lanes

Similar to NCC PWP/TREP's plan to adjust for growth and current bottlenecks, the most challenging aspects related to building new private transportation infrastructure for SCIA will be finding new land or room to widen lanes. It is projected that a new airport in Oceanside will add 40,000 daily trips to the combined I-5 sections within the Tri-County region. Although this number is minimal, compared to current and projected volumes, it might present substantial impacts on already high volume periods of time such as rush hour and Fridays.

The proposed projects by District 12 from the OC section and NCC PWP/TREP in the NCC provide adequate improvements to accommodate not only future population and business growth, but also the additional growth of the proposed airport. The only modifications that should be considered are extending HOV lanes from SR 73 down south through the 18.5 miles traveled through Camp Pendleton as well as the addition of a Direct Access Ramp in north Oceanside; preferably at I-5/SR 76 connection or Mission Ave. Adding more HOV lanes in the OC section will further ensure that the additional daily trips created by the new airport will not add congestion.

Arterial Road Access to and from I-5

Arterial roads stemming off of the I-5 will also play a vital role in connecting passengers to the proposed airport. Whether it is through public transit or via private vehicles, poorly-planned surface streets will frustrate and even delay travelers on their way to SCIA. Within the NCC, the two main arterial roads that will assist in the efficiency of transportation are Pacific Coast Highway (PCH) and El Camino Real (ECR).

Even with these main city streets being popular alternatives, the added traffic from the new airport will require the addition of lanes to allow more access. Currently, the PCH section defined in Table 3.1 shows little to no growth potential as the four-lane road is lined with store-front businesses adjacent to pedestrian sidewalks.

ECR is located further east in Oceanside and has room to grow within its four lane section. Increasing ECR up to six lanes will help to ensure adequate flow for cross traffic of travelers originating off of ECR or cutting across from the SR-78 to SR-76.

Mission Avenue, another arterial road, stemming off of the I-5 and heading west bound offers an opportunity to connect travelers to a mass public transit system. A park and ride may be created for passengers to board a public transit which could then take them directly to a terminal. Alternatively, travelers could take public transit to this location, either via train or bus, and then take a private commercial vehicle such as a taxi over the short remaining distance to the new airport terminal. Whatever the form of travel, Mission Ave geographically offers an excellent opportunity to meld multiple forms of transportation efficiently.

Highway 78

Current Traffic Conditions

Highway 78 (SR-78) runs east/west between I-5 and I-15 through four cities, Oceanside, Vista, San Marcos, and Escondido with just over half a million people living along the corridor. Over the span of 16.5 miles with six general purpose lanes, this route currently has 143,000 daily trips with a large portion of traffic occurring during rush hour (Parsons Brinckerhoff, 2012). In 2011, 25% of the furthest eastbound section of this route was named number 12 out of the 50 worst commutes in America (The Daily Beast, 2011). Since that time, SANDAG and the City of San Marcos have worked closely to widen off-ramps and overpasses as well as add access lanes near the Nordahl Road exit and the I-15 interchange. Such changes have made the route move more quickly but have not fully remedied the problem. The remedy has not worked for two reasons: it only addresses the last 4.2 miles in the eastbound side of SR 78 and population continues to grow within the North San Diego County communities surrounding the freeway.

Based on a SANDAG study in 2012, the population along the SR-78 Corridor is expected to grow 21% by 2050 (Parsons Brinckerhoff, 2012). This suggests that daily trips by that time will be nearly 173,000. To handle this higher volume of traffic and curb existing bottleneck concerns, both the NCC PWP/TREP and SANDAG have completed studies offering multiple alternatives as solutions. The NCC includes the I-5/SR-78 Interchange and has therefore begun exploring options for improving this connection. Although this study was published in 2014, there was no one alternative recommended. Instead it would be left

up to later planning by the North Coastal Commission to decide the best solution as other portions of the proposed NCC PWP/TREP plan are implemented.

Addressing more of the concerns of congestion and over capacity throughout the entire 16.5 mile route, SANDAG published its 2050 Regional Transportation Plan (RTP) in 2012 proposing the addition of two new HOV lanes with toll rates for SOVs (single occupancy vehicles) on SR-78. The final recommendation ended with the plan being put on hold until further analysis could be made. This was primarily due to excessive costs of building and managing the toll lanes. Analysis of the toll lanes showed that although tolls would help to recoup some costs and provide funds for long-term maintenance, loan interest and operating costs would still run too high.

However, the overall plan to add HOV lanes across the entire span of SR-78 will likely have positive implications for a new airport as well as residents and commuters of the SR-78 corridor. Doing so would change SR-78 to a 6 plus 2 (3 general use and 1 HOV in each direction). The HOV lanes will help ease the flow of traffic, promote public/group commuting, and would be good for the environment. However, it should be noted that such a proposed plan, with keeping the HOV lanes doubled up as toll lanes for SOVs, ranges from \$917 million to \$1.1 billion in build costs. These costs do not include any type of direct access ramps (DARs) – something that may be a strong consideration for access to El Camino Real (ECR) as an arterial road to the proposed airport site.

The addition of a new airport in Oceanside will cause demand to increase moderately, with daily trips on this route increasing upwards of 19% more daily trips if all new traffic created by the demand of the airport were to traverse SR-78 (see Table 3.2). Such an increase would amount to 213,000 daily trips in the worst case scenario. However the minimum increase is likely to be an only 2% increase totaling daily trips to approximately 176,000 in the year 2050. Therefore, the best alternative to SR-78's potential traffic flow demand is to recommend SANDAG's plan for creating HOV lanes throughout SR-78. Operating costs should be supplemented by additional tax revenues from the proposed airport. Furthermore, these HOV routes will not only enhance private vehicle travel but also allow public transit to use of the HOV lanes as express lanes. The aspects of DARs on this route, although helpful in heavily congested areas, may not be the best fit for SR-78. As such they are not recommended for additions to the SR-78 in support of a new airport at this time. This is primarily because they work best when two HOV lanes exist and the number of daily trips do not warrant more than one HOV. If further expansion, such as widening SR-78

to add more general purpose lanes, occurs then DARs and a second HOV lane should be considered.

Interstate 15

Current Traffic Conditions

Interstate 15 (I-15) runs for 50 miles within the Tri-County region. This includes the portion of the I-15 from SR-56 up to the I-15/I215 split. In 2012, traffic volumes along this area ranged from 197,000 to 312,000 vehicles daily (TransNet, 2014) with the most heavily congested areas falling between SR-56 up through SR-78. Before the recent addition of 4 express lanes, the large volume of traffic caused average delays of up to 45 minutes. The completion of the 20-mile Express Lane Project included additional express lanes, the implementation of rapid bus transit (RBT) with direct access ramps (DARs) and intermediate access points (IAPs). The project spanned from the SR-78 in Escondido down to the SR-163 in San Diego. The express lanes were completed in 2012 and include four HOV lanes in the I-15 median. These improvements have lowered the travel time from 45 minutes to 30 minutes between SR-78 and SR-163. In addition, average speeds have risen from 30MPH and 40MPH, to more than 60MPH (SANDAG, 2013).

The project was divided into three segments with the north and middle segments included in the Tri-County region. The north segment, from Centre City Parkway to SR-78, cost a total of \$187M. The funding for these improvements came from several sources with 60% from federal, 14% from state, and 23% from TransNet (TransNet, 2014). The middle segment, from SR-56 to Centre City Parkway, cost a total of \$467M. Funding for the middle expansion included 21% from federal, 3% local, 68% state, and 7% from TransNet (TransNet, 2014). Completion of the middle and northern segments of the project, including the implementation of bus rapid transportation totaled nearly \$1B (SANDAG, 2013). About \$1M a year is recouped from solo drivers using the new express lanes through the FastTrack program (SANDAG, 2013).

In addition to completing the express lanes, the expansion of the I-15 interchange to SR-78 was recently completed in 2012. This section of the interstate is heavily congested creating severe bottlenecks during morning and afternoon commuting hours. The project widened the connector on-ramp from I-15 to west-bound SR-78. The previous delay averaged around 14 minutes, and would have increased to 30 minutes by 2030 if no action had been taken (TransNet, 2014).

The recent addition of the express lanes and rapid bus transit system are expected to reduce the current and projected congestion, but there is still a need for continued expansion. Population and employment growth by the year 2030 along I-15 are expected to reach 31% and 25% respectively (SANDAG, 2013). The area between Escondido and Riverside is expected to reach growth rates even higher due to the opportunity for expansion. These growth rates will result in increased travel demand on the I-15 with projected 2030 traffic volumes reaching a maximum of 365,100 vehicles per day (California Department of Transportation, 2009). Using the same projected growth rate for 2030, the 2040 traffic volumes could be as high as 400,000 daily trips. This equates to a 28% increase in traffic volume based on the highest current volume. Due to the recent completion of an expansion, there are currently no major approved expansion projects on the I-15.

Although the impact of a new airport in Oceanside mainly affects I-5 and SR-76, I-15 will certainly be affected around SR-76 and SR-78 interchanges. Using a worst case scenario per Table 3.2, assuming all traffic runs through the I-15, the new airport will create an additional 40,000 additional daily travelers. With projected volumes at 400,000, this adds an increase of just 9%. Based on this assumption, no additional expansions will be needed in order to compensate for SCIA. With that in mind, the I-15 will need to expand based on projected growth. The traffic increases along I-15 will come from population growth whether or not an airport is built. This growth is expected to cause lots of congestion. Additional traffic from the passengers flying out of the airport will add to the problem, but as a proportion of the overall growth in traffic, it is very small. The 2050 RTP emphasizes the increased expansion of public transportation projected in the next thirty years. Therefore, the most efficient way to maintain traffic levels would be to increase the amount of DARs and IAPs along the I-15, making bus transportation more convenient. For example, there are currently five transit centers along the I-15 located at Miramar College, Sabre Springs/Peñasquitos, Rancho Bernardo, Del Lago, and Escondido. Creating additional transit centers with direct access routes in areas that are heavily congested such as the I-15/SR-78 interchange would increase the use of public transportation and therefore obviate the use of private transportation. Further, adding an additional HOV lane should also be considered when adding additional DARs to compensate for heavier bus traffic.

Environmental Impacts

With the continued approval of TransNet in 2004, a new program called Environmental Mitigation Program (EMP) was implemented. The program supports habitat

conservation plans including that of the SR-76 expansion (Caltrans, 2014). This program implemented several techniques to minimize environmental impacts. For example, directional fencing and the construction of animal under-crossings were implemented in all sections of the expansion. A review of the data collected to date suggests the combination of directional fencing and wildlife crossings may be reducing vehicle-wildlife collisions and allowing for wildlife movement across SR-76 (Caltrans, 2014). Medium-to-large species using the wildlife crossings include the badger, bobcat, coyote, raccoon, striped skunk, desert cottontail and opossum. In addition, bio-filtration swales/strips and new drainage systems were constructed to mitigate storm water run-off (Transnet, 2011). These filters use plants in channels to capture and degrade pollutants carried by storm water runoff. These filters also reduce the volume of runoff (Caltrans, 2014).

In addition to land and wildlife preservation, air quality is a focus for environmental impacts. The current and planned expansions on SR-76, as with all transportation activities, are required to conform to the guidelines pursuant to 176(c) of the Federal Clean Air Act (42 USC §7506(c)) as outlined in the 2050 RTP. Further, transportation activities must not create new air quality violations, worsen existing violations, or delay the attainment of the National Ambient Air Quality Standards (NAAQS) (SANDAG, 2011).

The Coastal Act governs environmental impacts near and around the proposed airport site as it falls within the North Coastal Corridor. Air quality is likely the largest area of concern as a majority of vehicles emit some type of emission. For the NCC, Coastal Act Section 30253(d) code governs air quality. However, all standards within this code section follow the broader State of California regulations and therefore air quality principles will be the same for all major routes discussed within this report. In addition to air quality, other environmental impacts to consider are run off/water quality control and coastal sight line issues, governed by Coastal Act sections 30230 and 30251/30253(b).

The quality of water in the rivers, streams, and lagoons within the NCC is vitally important to many ecosystems as well as to recreational users. Runoff from roads can cause contamination of these water sources. Therefore, all road infrastructure will need to comply with California regulations for storm water and drainage alongside the main routes.

Regarding the Coastal Act section 30251 and 30253(b), new or modified structures along the NCC must not create any type of obstruction of coastal views and must blend into the natural landscape along the San Diego Coastline. Although the NCC extends inland for

six miles, most structure compliance regulations do not apply if a structure is not within sight of the coastline or can equally view the coastline from its own location.

Beyond air and water, widening existing infrastructure along I-5 rather than building new roads is expected to minimize immediate impact on natural habitats of wildlife residing within open spaces. Leaving natural areas untouched as much as possible is a positive solution for both budget and the environment.

Capacity Management for Proposed Airport

Over the next thirty years, the Tri-County region is expected to see major increases in population and employment growth. These increases will directly affect the number of drivers on the road creating the need to properly plan and develop the current private transportation infrastructure. Many expansions have already been completed, such as the I-15 express lane project and the widening of SR-78/I-15 and SR-76/I-15 interchanges. Further, several expansion projects are approved and already in construction, or will be under construction to alleviate future traffic volumes. The major expansion in the future will be the 2010 NCC PWP/TREP proposal that includes widening I-5 to accommodate two express lanes on each side. In addition, current construction is underway along SR-76 to complete a four-lane highway on each side from I-5 to I-15. Based on the 2050 RTP, the current and planned expansions are projected to adequately serve the increasing demand. Possible improvements include incorporating additional HOV lanes and increasing DARs to provide more convenient public transportation.

Although these planned expansions do not take into consideration the construction of a new airport, it is expected that these improvements will be able to handle the increase in traffic volume with minimal impact. This is because the greatest impact of the new airport will be along I-5 and SR-76. There are current plans for major expansions on both of them. The estimated impact of the new airport is expected to be roughly 40,000 additional daily trips. This equates to a 4 – 11% increase on the I-5 (see Table 3.3). While the increase is a more substantial percentage for SR-76 at 29%, current construction is underway to minimize impact. In both cases, the addition of an HOV lane and BRT system should be adequate additions to compensate for the new airport. Finally, with the push for more public transportation options, it is expected that public transportation will have a greater impact on alleviating traffic congestion. Although current public transportation is vastly underutilized with just 2% of current LAX and SAN transportation modes, it can be estimated that with improvements, that will increase to 10% based on planned expansions.

Route	Max Current	Planned	% Increase	with Airport	% Increase
76	30,000	100,000	233%	140,000	29%
5	700,000	910,000	30%	950,000	4%
78	143,000	173,000	21%	213,000	19%
15	312,000	400,000	28%	440,000	9%

Table 3.3: Estimated increase in daily trips per road.

Public Transportation



Figure 3.1: Map representing passenger rail services and stations.

Introduction

Public transportation for the Tri-County region includes North County Transit District (NCTD), Orange County Transportation Authority (OCTA), and Amtrak.

NCTD provides public transportation for the North San Diego County region and operates various types of transportation services including BREEZE, SPRINTER, COASTER, LIFT, and FLEX. For the purpose of this study, we will concentrate on the first three.

COASTER is a commuter train for North San Diego County that travels north and south with the northernmost stop in the city of Oceanside, and the southernmost stop San Diego Santa Fe Station. The SPRINTER is an east-west commuter traveling from the city of Escondido to the city of Oceanside. The BREEZE is a bus service operating throughout the North San Diego County region (North County Transit District [NCTD], 2013).

OCTA provides public transportation for Orange County and parts of Riverside County. This study will focus on Metrolink's Orange County line (OC line) and Inland Empire - Orange County line (IE-OC line); both are commuter trains. The OC line travels south and north connecting the southernmost station, Oceanside, to the northernmost station, Los Angeles Union reflected in Table 3.4. This study focuses only on the routes stopping at the Oceanside station. The IE-OC lines runs both north and south, as well as east and west. This line has a total of 15 stops between the Oceanside and San Bernardino stations.

Amtrak provides train service throughout California, with the Pacific Surfliner servicing areas within the Tri-County region. The Pacific Surfliner travels north and south from the San Diego Santa Fe Depot station to the San Luis Obispo station. This study focuses only on routes that stop at the Oceanside station (Orange County Transportation Authority, [OCTA], 2014).

As part of the initiative proposed by the NCC PWP/TREP to increase the percentage of travelers using transportation modes other than single occupancy vehicles (SOVs), improvements in a variety of travel modes are being considered including connectivity between the various travel options, which could lead to a shift from SOVs to carpooling and other means of massive transportation.

		CURRENT		PLANNED	
		2013 Annual Capacity	2013 Daily Round Trips	2040 Annual Capacity	2040 Daily Round Trips
NCTD	COASTER	5,621,000	11	10,220,000	20
	SPRINTER	10,269,440	31	30,808,320	93
METROLINK	Orange County Line (Oceanside Stop Only)	1,927,200	5	2,698,080	7
	Inland Empire Orange County Line	2,023,560	7	4,047,120	14
AMTRAK	Amtrak Surfliner	3,179,880	11	5,203,440	18

Table: 3.4: Public transportation current capacity and forecasted capacity with planned expansions.

COASTER

As of 2013 the COASTER served over 1.6 million passengers, operating 22 trains daily, or 11 round trips (NCTD, 2013). The COASTER stops at the following eight stations from north to south: Oceanside, Carlsbad Village, Carlsbad Poinsettia, Encinitas, Solana Beach, Sorrento Valley, San Diego-Old Town, and San Diego-Santa Fe Depot. The COASTER currently operates with seven locomotives each of which can carry up to five coaches and each coach has a seating capacity of 140 passengers (J. Dunning, personal communication, October 22, 2014). Therefore, the maximum current capacity is just over 5.6 million passengers annually.

The COASTER operates along the San Diego County portion of the LOSSAN corridor. Along this portion of the corridor, Amtrak, Metrolink, and COASTER operate on mainly a single train track. Because of this, the COASTER’s operation schedule is dependent upon the operation schedule for the Metrolink and Amtrak. This leads to two problems. The first is longer COASTER commute time, which is currently between 25 and 45 minutes (J. Dunning, personal communication, October 22, 2014). The second problem is increased emissions since the COASTER must idle when it is waiting for another train to pass (California Coastal Commission San Diego Area, 2014).

To enhance service time and reliability, and to reduce emissions, there are current plans to add double-tracking at the following locations on the LOSSAN corridor within the

San Diego County: San Dieguito Del Mar, San Elijo Lagoon, Moonlight to Swami in Encinitas, Batiqitos Lagoon in Carlsbad and Encinitas, Carlsbad Village and East Brook to Shell (NCC PWP/TREP). The double tracking is expected to cost \$5.6B (SANDAG, 2011). In addition to adding a second track at Carlsbad Village, there are plans to straighten a curve that is also expected to decrease operating times. Lastly, there are plans for the Oceanside station to add a third track since it is a connection point from the Metrolink to the Coaster as well as the Pacific Surfliner, and to extend the boarding platform and pedestrian crossovers (California Coastal Commission San Diego Area, 2014).

By the year 2040, the COASTER is expected to operate 20 round trips during weekdays, an increase from the current 11 round trips. Five of the round trips are expected to connect the Metrolink's Orange County line to Oceanside and two are expected to connect the Inland Empire Orange County line to Oceanside (California Department of Transportation, 2013). The planned capacities are reflected in Table 3.4.

BREEZE

The BREEZE is a bus service that operates 164 vehicles covering 30 routes from Escondido to Oceanside, as well as coastal areas (North County Transit District [NCTD], 2014). The BREEZE offers connections to other transportation lines such as SPRINTER, COASTER, Metrolink and Amtrak.

The BREEZE has an annual ridership of 8.3 million passengers with a weekday average ridership of 26,200 passengers (NCTD, 2014). While there are some busses that have capacity for only 19 passengers, the majority of them can seat 38 riders (Byll Shelton, NCTD, personal communication, September 16, 2014).

One of the proposed improvements includes the Bus Rapid Transit (BRT). This is a route proposed in the SANDAG 2050 Regional Transportation Plan, which combines stations, enhanced vehicles, Intelligent Transportation Systems (ITS), and a priority running ways into a premier rubber-tire transit alternative with fast, frequent, and high-quality service. The first planned route is Route 653, which is scheduled to take effect no later than 2035. This route will serve the high-density Mid City residential area in central San Diego and the Palomar Airport business park, specifically from La Jolla Village Drive to just north of Lomas Santa Fe Drive. This route is scheduled to run at 15-minute intervals during peak hours. While this is the only route currently proposed, other bus routes will be able to use the Express Lanes along the widened I-5 corridor. These operations will be complemented

by the direct access ramps and the enhanced park-and-ride facilities being proposed by the NCC PWP/TREP.

Other proposals that are intended to promote a shift in how San Diegans travel from single occupancy vehicles (SOV) to more environment-friendly modalities include enhanced bus service along the Coast Highway; this effort is designed to reduce vehicle miles traveled (VMT) and air pollutants. Part of these enhancements include fewer stops, dedicated transit lanes, traffic-signal priority for buses as well as short dedicated lanes approaching intersections that would allow buses to advance to the intersection ahead of other vehicles stopped at traffic signals. Buses servicing this area would operate year-round at 10-minute frequencies throughout the day to provide a higher-quality service that would complement the existing network of local bus routes along the coastal corridor. These enhancements are expected to begin operations between 2021 and 2030 (NCC PWP/TREP).

According to the NCC PWP/TREP, Express Lanes and Direct Access Ramps (DARs) are being planned to help prioritize service for High Occupancy Vehicles (HOV), buses as well as other types of transit vehicles.

The plan envisions having two High-Occupancy Vehicle (HOV) or Express Lanes in each direction of the I-5. These lanes are meant to give priority to carpools, vanpools, and buses reducing travel times and encouraging single riders to engage in ridesharing. However, because it is expected that a large number of travelers will continue to use SOVs as their form of transportation, the NCC PWP/TREP proposes that Express Lanes be opened to SOVs through a fee to ensure that excess capacity of these lanes is not wasted. The revenues generated from SOV utilization of Express Lanes would be allocated for future transportation improvement projects.

The DARs proposed by the NCC PWP/TREP are intended to allow high occupancy vehicles (HOVs) direct access into the Express Lanes from overcrossings or tunnels. DARs are planned to be located near Voigt Drive in San Diego and Manchester Avenue in Encinitas.

SPRINTER

The SPRINTER is a light rail service that runs from Escondido to Oceanside with 15 stations along the route. This line also offers connections to other public transportation lines such as BREEZE, COASTER, Metrolink, and Amtrak.

The SPRINTER has an annual average ridership of 2.4 million passengers, and a weekday average ridership of 8,300. The SPRINTER operates a fleet of 12 light rail diesel

multiple unit passenger trains, each with capacity for 226 passengers (NCTD, 2014). Two trains can operate together providing a seating capacity of 452 (NCTD, 2013). The SPRINTER operates every 30 minutes and has 31 roundtrips. With a maximum seating capacity of 452, then its annual capacity is over 10 million passengers.

According to the SANDAG 2050 Regional Transportation Plan published in October 2011, planned improvements to the SPRINTER include double tracking the rail lines to increase the frequency of service, adding limited-stop express services with the SPRINTER Express, and extending the service to south Escondido.

The double tracking project foresees grade separations at El Camino Real, Vista Village Dr, Melrose Dr, Mission/San Marcos stations and two additional locations. The double tracking rail with service from Oceanside to Escondido is being referred to as Route 399 while the SPRINTER Express is being referred to as Route 588.

The Double Tracking Route 399 and the SPRINTER Express Route 588 are expected to be in operation by 2030 offering service every 10 minutes. With routes operating every 10 minutes rather than the current 30 minutes, according to NCTD, the SPRINTER could serve up to 30.8 million passengers once the planned expansion is complete as shown in Table 3.4.

The objective of extending the SPRINTER to south Escondido is to provide connections along the I-15 corridor between Escondido and downtown San Diego. According to the SANDAG 2050 Regional Transportation Plan, the BRT services would complement the extended SPRINTER service.

MetroLink

OCTA's Metrolink provided rail service to over 4.4M passengers in 2013. Of those passengers, the Orange County line provided commuter rail service to over an estimated 2.5M passengers and Metrolink's Inland Empire Orange County line served over an estimated 1.3M passengers in 2013 (OCTA, 2013). Appendix C.4 refers to the calculations to estimate the number of passengers on the OC and IE-OC line.

The Orange County line stops at the following locations from north to south: Irvine, Laguna Niguel/Mission Viejo, San Juan Capistrano, San Clemente, San Clemente Pier, and Oceanside. The Inland Empire Orange County line includes these stops but it continues east to West Corona, North Main Corona, Riverside La Sierra, Riverside Downtown, and San Bernardino. Before this line reaches the West Corona station, it stops at Tustin, Orange, and Anaheim Canyon (OCTA, 2014).

The Orange County line operates 19 trains daily during the week, of which 10 stop in Oceanside. The Inland Empire Orange County line operates 14 trains daily during the week all of which connected into Oceanside. During the weekend, four trains are operating on the Orange County line and four trains are operating on the Inland Empire Orange County line (California Department of Transportation, 2013).

According to the Metrolink Fleet Plan 2012, Metrolink uses four different types of rail cars. The types and the respective seating capacity include the Sentinel Gen 1 which seats 149, the Sentinel Gen 2 which seats 140, the Sentinel Gen 3 which seats 141, and the Guardian Fleet which seats 132. For a conservative estimate the seating capacity of the Guardian will be used to estimate the seating capacity available for the Orange County line and Inland Empire Orange County line. With an average of 471 passengers per train on the Orange County line, an average of four cars per train would be necessary to accommodate these passengers. With an average of 320 passengers per train on the Inland Empire Orange County line, an average of 3 cars per train would be necessary to accommodate these passengers, Table 3.5 reflects these calculations.

	Metrolink	
	OC Line	IE-OC Line
2013 Annual Passengers	2,525,873	1,300,761
2013 Avg. Daily Passengers	6,920	3,564
Avg. No. Weekday Trains	19	14
Avg. No. Weekend Trains	4	4
No. Annual Trains	5,360	4,060
Avg. No. Daily Trains	14.7	11.1
Avg. No. Passengers per Train	471	320
Avg. No. Cars per Train	3.6	2.4
Avg. No. Cars Needed per Train	4	3

Table 3.5: Calculations to estimate the number of cars per train.

The calculated capacity for the Orange County line which stops in Oceanside is over 1.9 million. This is based on 10 daily trips, with an average of four cars entailing 132 seats, operating for 365 days. The calculated capacity for the Inland Empire Orange County line is

over 2 million passengers. The basis for this estimation is 14 trips with an average of 3 cars entailing 132 seats, operating for 365 days.

The planned developments within the Orange County region include a passing track between Laguna Niguel and San Juan Capistrano, a third main track along an 8.5 mile stretch in Irvine, and a double track at between San Onofre and Pulgas. These projects are estimated to cost \$26.8 million, \$17 million, and \$36 million respectively and these changes will allow for increased capacity as well as enhance service time (California Department of Transportation, 2013).

By 2040, Metrolink's Orange County line anticipates a total of 20 round trips of which seven will stop at the Oceanside station. The Inland Empire Orange County line is expected to operate 12 round trips, all of which will stop at the Oceanside station (California Department of Transportation, 2013). Seven stops for the Orange County line provides an estimated capacity of over 2.6 million passengers and 14 stops for the Inland Empire Orange County line provides an estimated capacity of over 4 million passengers (refer to Table 3.4).

CommuterLink

People from southern cities in Riverside will also benefit from having an airport in the region. Due to the increased population growth in southern Riverside County, the implications of traffic generated from this commute must be addressed.

The only public transportation service that connects Riverside County to San Diego County is CommuterLink via route 202 operated by the Riverside Transit Agency (RTA).

CommuterLink Route 202 connects the Murrieta/Temecula area to the Oceanside Transit Center from which passengers can make subsequent connections to other public transportation lines if needed. Currently, this route runs on weekdays only transporting an average of 6 passengers per trip. (Riverside Transit Agency, 2014). CommuterLink buses have a seating capacity of 27 passengers, which indicates that this route is being underutilized. The Riverside Transit Authority (RTA) suggests that in many cases, a van-size vehicle can meet the demand for this route.

This route is a concern for the RTA as it represents a costly outlier with the highest subsidy per passenger. Route 202 incurs a subsidy cost of \$18.56 per passenger boarding. According to the Riverside Transit Agency Service, while route 202 plays a significant role by providing connections beyond RTA service areas, the high costs of this service warrants consideration of more cost-effective alternatives.

Amtrak

Amtrak's Pacific Surfliner currently operates three trains in both Orange County and San Diego County, with one additional train during the weekdays in Orange County. The Pacific Surfliner includes the same stops as the COASTER and Orange County lines, with the exception of the station at San Clemente. In 2013, Amtrak's Pacific Surfliner had 2.7 million passengers, which is an average of approximately 7,413 passengers daily (Amtrak, 2013).

Since the Pacific Surfliner operates along the same tracks as the COASTER and Metrolink's Orange County line, the plans for double tracks and other rail improvements addressed in the COASTER section and Metrolink section apply to Amtrak's Pacific Surfliner. Again, the goal for these planned developments is to increase capacity, decrease travel time, reduce emissions, and upgrade the tracks to keep up with faster trains (California Department of Transportation, 2013).

According to the Pacific Surfliner South Corridor Service Development Plan, the Pacific Surfliner is expected to operate 18 daily round trips, four of which will have limited stops. Estimated capacity for the Pacific Surfliner in 2040 is over 5.2 million passengers; planned capacity is summarized in Table 3.4. This is based on an estimated three cars per train, assuming a similar seating capacity as the Metrolink's cars (California Department of Transportation, 2013).

Environmental Impacts

The rail systems discussed run along the LOSSAN Corridor traveling through Orange County's and San Diego County's coastal region. Therefore, when these projects were initially considered, approval from the Coastal Commission was needed to move forward with the rail upgrade plans. Concerns have been addressed regarding the runoff from the construction projects as well as the unavoidable fill impacts to the wetlands. The California Coastal Commission released the North Coast Corridor Public Works Plan & Transportation and Resources Enhancement Program (California Coastal Commission San Diego Area, 2014) report in June 2014 regarding the proposed projects for the rail enhancements and the projects' environmental effect on the coastal region.

The proposed rail service enhancement projects were determined after consideration for various alternatives were review. The projects selected had the least negative impact to the surrounding environments. The Resource Enhancement and Mitigation Program (REMP) was put in place to provide environmental benefits such as

restoring and enhancing natural coastal regions which actually enhance and gain habitats in areas such as the Batiquitos and Los Peñasquitos Lagoons. The enhancements include the expansion of bridges to improve the water flow leading to a more self-sustainable environment. REMP also includes funding for maintenance of these lagoons and for a Scientific Advisory Committee which monitors the mitigation process (California Coastal Commission San Diego Area, 2014).

Furthermore, the proposed rail enhancement project are required to minimize risk by ensuring structural integrity and stability, and to reduce the risk from a rise in the sea level. The proposed projects include monitoring devices to sensor ground movement as well as a plan to minimize construction run off.

Currently, the waterways have all been adversely affected by urbanization so without the proposed rail projects, these waterways would continue to be damaged. However, the proposed rail projects help through habitat restoration projects, as well as through reduction in emissions by promoting public transportation, hopefully lowering the number of vehicles on the road. If the proposed rail project did not move forward, there would be inconsistencies with the Coastal Act policies 30210-30213, 30252 (public access), 30230, 30231 (marine biology and water quality), 30250 (concentration of development), and 30253 (air quality). The proposed project will be monitored throughout the development phases so REMP is based on the latest data, such as sea level rise, and most innovative technologies (California Coastal Commission San Diego Area, 2014).

Capacity Management for Proposed Airport

As mentioned in private transportation section, of the 66.6 million passengers served by the Los Angeles Airport (LAX) in 2011, 62% originated from (LAX) (UNISON Consulting, 2012). Of the 17.7 million passengers served by the San Diego International Airport in 2008 (SAN) 47% originated at SAN (Malcom Pirnie, 2008). This provides an average of 54.61% of passengers between LAX and SAN who originated at those airports. Additionally, only 3% from LAX used public transportation (UNISON Consulting, 2012) and only 1.2% use public transportation at SAN (Malcom Pirnie, 2008) providing an average of 2.1% of originating passengers using public transportation.

According to the Pacific Surfliner Report, the planned development will lead to an expected 48% weighted average increase in ridership in 2040 versus no development along the tracks on the Coastal Corridor (California Department of Transportation, 2013). Appendix C.7 shows the weighted average increase calculation. Since this expected increase

in ridership is based upon commuters, not airline passengers, we conservatively estimate 10% of originating passengers will use public transportation rather than the current average of 2.1%. Assuming 10% of originating passengers will use public transportation, this estimates an additional 4,488 passengers per day or just over 1.6 million passengers annually as is shown in Table 3.2.

CAPACITY USED 2013				
		2013 Annual Passengers	2013 Annual Capacity	Capacity Used (%)
NCTD	COASTER	1,629,196	5,621,000	29.0%
	SPRINTER	2,400,000	10,269,440	23.4%
METROLINK	Orange County Line	2,525,873	3,661,680	69.0%
	Inland Empire - Orange County Line	1,300,761	2,023,560	64.3%
AMTRAK	Amtrak Surfliner	2,705,823	3,179,880	85.1%

Table 3.6: Calculates the capacity used in 2013 for each rail line.

Currently, public transportation is being underutilized. On average, 23.4% of capacity is used for the SPRINTER which travels east of the proposed airport, 49.3% of capacity is used for the rails traveling south of the proposed airport which include the COASTER (NCTD, 2013) and Amtrak’s Pacific Surfliner (Amtrak, 2013), and 73.7% of capacity is used for rails traveling north of the proposed airport which include Metrolink’s Orange County line and Inland Empire Orange County line (Metrolink, 2013). Table 3.6 reflects the capacity used in 2013 for each rail service. Since we do not have data available for the number of passengers who would travel either east, south, or north, we can consider the worst case scenario that these passengers would all travel in one direction. If all 1.6 million passengers traveled east, this would only be 5.3% of 2040 capacity for the eastbound rail, 2.2% of 2040 capacity for the southbound rails, and 13.7% of the northbound rails. These calculations can be referenced in Table 3.7.

According to the Pacific Surfliner South Corridor Service Development Plan, forecasted rail ridership is expected to increase but not at a greater rate than the forecasted

increase in rail capacity (California Department of Transportation, 2013). Since, the percent of capacity used is not expected to considerably change, the planned improvements to public transportation would be able to handle the forecasted 1.6 million annual additional passengers from the proposed airport.

2040 CAPACITY EFFECT FROM PROPOSED AIRPORT TRAVELERS			
		10% of Originating	Average Capacity Used
AIRPORT IMPACT	East of SCIA Additional Riders	5.3%	23.4%
	South of SCIA Additional Riders	10.6%	49.3%
	North of SCIA Additional Riders	13.7%	73.7%

Table 3.7: The average capacity used in 2013 for rails traveling east, south, or north and the percentage of 2040 capacity used if all 10% of originating passengers would use rails traveling either east, south, or north of the proposed airport.

Parking Infrastructure

Introduction

The SCIA will require substantial parking options for passengers parking at the airport, or passengers parking at public transportation hubs. The proposed parking infrastructure will need to take into account the initial needs of the growing population, as well as the growing needs as the number of travelers increase.

Parking Infrastructure at Other Airports

Estimates for parking needs at SCIA were established using other international airports throughout the US. When compared to airports such as Dulles and George Bush, San Diego International Airport has a high number of passengers per parking spaces as shown in Table 3.8.

Airport	Passengers	Parking Spaces	Passengers/Spaces
Dulles Airport	22,600,000	20,000	1130
George Bush	40,000,000	25,000	1600
Los Angeles	64,000,000	16,000	4000
San Diego	17,710,000	3,800	4661
PHL	30,770,000	19,000	1619
SCIA	30,000,000	19,000	1579

Table 3.8: Comparison of parking spaces among international airports.

The lack of parking at SAN can partly be explained by the availability of parking throughout downtown San Diego, and the year-round weather being conducive for further walking – or ride sharing – from distant parking locations.

The location of SCIA positions it away from a large downtown setting, making nearby parking facilities less attractive alternatives for handling the parking passengers. SCIA will need parking infrastructures deliberately designed for airport passengers.

SCIA Parking Infrastructure

At its total capacity, SCIA needs to prepare to support 30M. This is very similar to Philadelphia Airport (PHL) which had 30.77M travelers 2012. PHL offers has 19,000 parking spaces. Therefore, SCIA should have space reserved for the same number of parking spaces. While the ratio of passengers to parking spaces is much greater than Dulles Airport or George Bush, it is considerably lower than LAX.

Parking Infrastructure Design

According to Section 6792 of the Zoning Ordinance, each parking spot should be a minimum of 9 feet wide and 18 feet long (larger for handicap accessible spots). This allows a standard full size vehicle to park. If parking structures offer one-way aisles, a width of 12 feet is needed, or 24 feet for a two way aisle.

Table 3.9 shows the requirements for parking design from the San Diego County Parking Design Manual and Figure 3.2 shows the geometric shapes listed in the first column in Table 3.9.

Figure 3 Label	Design Component		Parking Angle				
			0° (Parallel)	30°	45°	60°	90°
A	Stall Width		9'(8') ¹	9'	9'	9'	9'
B	Stall Length		22'	18'	18'	18'	18'
C	Stall Width Parallel to Aisle		N/A	18'-0"	12'-9"	10'-5"	9'-0"
D	Stall Depth to Curb or Wall		N/A	16'-10"	19'-1"	20'-1"	18'-0"
E	Stall Depth to Interlock		N/A	12'-11"	15'-11"	17'-10"	18'-0"
F	Aisle Width ²	One-Way	13'	14'	16'	19'	N/A
		Two-Way	24'	22'	24'	24'	26'
G	Module Width Wall/Curb to Interlock	One-Way Aisle	N/A	43'-9"	51'-0"	46'-11"	N/A
		Two-Way Aisle	N/A	51'-9"	59'-0"	61'-11"	62'-0"
H	Module Width Interlock to Interlock	One-Way Aisle	N/A	39'-10"	47'-10"	54'-8"	N/A
		Two-Way Aisle	N/A	47'-10"	55'-10"	59'-8"	62'-0"
not shown in Figure 3	Module Width Wall/Curb to Wall/Curb	One-Way Aisle	31'-0"	47'-8"	54'-2"	59'-2"	N/A
		Two-Way Aisle	42'-0"	55'-8"	62'-2"	64'-2"	62'-0"
I	Cross Aisle Width ²	One-Way	15'	15'	15'	15'	15'
		Two-Way	22'	22'	22'	22'	22'

¹ 8' width applies to on-street parking stalls

² The Director may require greater aisle width due to emergency San Diego County Fire Authority equipment access needs. Aisles less than 24' shall not be designated as Fire Access.
N/A – Not Applicable

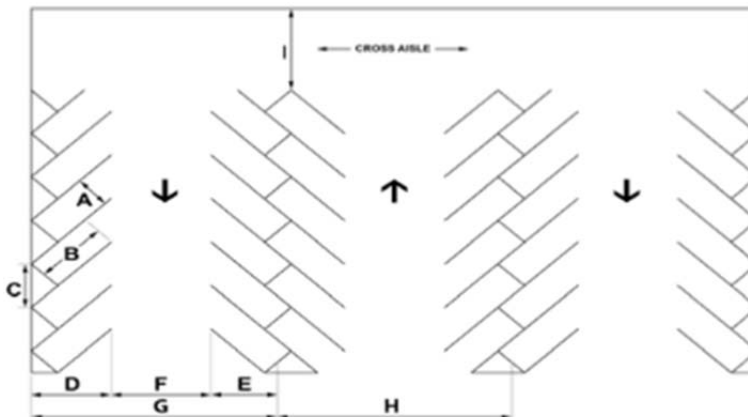


Figure 3.2: Shape of a parallel parking angle.

Parking for Private Transportation

Using PHL as a benchmark for SCIA, the specifications for parking spaces are shown in Table 3.10.

Width of one space:	9'
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Table 3.9: Requirements for parking design.

Length of one space:	18'
Total Sq. Ft per space:	162 sq. ft.
Spaces:	19,000
Acres:	71 (3,078,000 SF)

Table 3.10: Parking spaces specifications.

Single-story:	71 acres
Two-story:	36 acres
Three-story:	24 acres
Four-story:	18 acres
Five-story:	15 acres

Table 3.11: Acreage required.

This does not take into account logistical infrastructure such as ramps, gates, or buffer areas between parking and other structures. It also assumes single-story structures, so the acreage can be decreased as reflected in Table 3.11.

Logically, parking spaces will be separated into multiple structures, each with its own entrance, exit, and payment booths. One possible strategy in this regard is to locate some parking structures offsite.

Parking for Public Transportation and Remote Parking

Since SCIA won't be located in a downtown area, the traffic will increase significantly in the immediate area surround the airport, on SR-76. Because of this, it will be advantageous to locate some parking structures away from the airport, allowing travelers to park off-location and take public transportation (such as bus or dedicated train) to the airport terminal.

In this scenario, some of the parking structures might be located in the Oceanside area, allowing passengers to park in Oceanside and take a bus or train to SCIA. This would alleviate traffic in the immediate area.

Recommendations

Public Transportation

The proposed improvements included in the NCC PWP/TREP are designed to cope with the expected demand due to the normal population growth in the region by 2040. We propose that other initiatives be put into place to accommodate the addition of a new international airport and to reduce environmental impact. Along with the NCC PWP/TREP, we propose that further accommodations are made to the existing infrastructure and that additional projects are pursued to encourage travelers to use mass transit rather than single occupancy vehicles.

While the addition of a second track, or double track, throughout the entire rail corridor has been accepted as a means to increase capacity, other design improvements should be considered. For example, currently there are two options for the design of rail crossings: at-grade and trench tracking. At-grade rail crossings cause temporary road closures impacting local circulation of vehicles, pedestrian, and bike traffic (Carlsbad City Counsel, 2014). In addition, it creates noise and air quality impacts, and is generally less safe than trench rail crossings. Implementing trench rail crossings pulls tracks off of service

street levels creating less congestion at arterial roads and allowing for continuous traffic flow. Further, trench rail crossings use bridges to allow for safer pedestrian crossing. Finally, it also lowers emissions due to less idle time from temporary road closures. For these reasons, despite the fact that trench rail crossings are significantly more expensive than at grade crossing, it recommended that trench rail crossings are considered. It is important to consider that future SCIA passengers may be composed of more environmentally conscious generations. Furthermore, sustainability is of increasing concern in the United States and especially in the western region. Because of this, there is hope that more people would be willing to use convenient public transportation, making traffic in the Tri-County region more manageable. This should be leveraged in future developments. The habits of future generations may be different from those of current airport passengers.

To overcome some of the aversions to public transportation, improving parking facilities at transit centers should make travelers feel confident leaving vehicles for an extended period of time. Offering overnight parking at competitive rates may cover operational costs, and incentivize airport passengers to use public transportation.

The Oceanside Transit Center is a central junction for various public transportation lines. For this reason, it represents an opportunity to provide improved linkages among various transportation modes and SCIA. This adds to the attractiveness of locating an international airport in the Oceanside area as the mass transit infrastructure to serve it is already in place with plans to improve it. The missing ingredient would be a direct connection between the Oceanside Transit Center and Southern California International Airport. This could be accomplished not only through bus services and bus lanes, but perhaps even through a dedicated monorail that would be an environmentally friendly system that would not exacerbate current or future road traffic. Such a system could extend to offsite parking structures and reduce traffic congestion in the immediate area of SCIA.

Another alternative is a dedicated shuttle bus to transport passengers from the Oceanside Transit Center to the SCIA terminal. Due to the amount of traffic already experienced in this area and the traffic generated as a result of the airport, a dedicated lane should be made available especially for buses.

Private Transportation

In addition to public transportation infrastructure, new access roads need to be created in order provide access to SCIA. Currently, there are two arterial roads off SR-76 that could be expanded to reach the new airport; Benet Road and Foussat Road. These roads

wind through neighborhoods and are not meant for the high volumes of traffic that SCIA would create. Therefore, four alternatives are recommended. Each recommendation includes a separate check-in/parking site not attached to the main airport and are shown in Figure 3.3. Shuttles would take travelers to and from the check-in point to the airport.

The location of site 1 (11.8 acres) is directly adjacent to LOSSAN rail tracks providing seamless connections. In addition, this location offers easy access for bus lines and private vehicles. Site 1 would also benefit the City of Oceanside as a method to clean up seedy areas of town. Although this may prove to be a challenge as there are multiple residential and commercial lots to be acquired. Other challenges include difficulty in traversing over/under the I-5 overpass, maneuvering construction around ecological preserves, and creating ample parking with limited space.

The location of site 2 (37.8 acres) is directly accessible from SR-76 and very close to I-5 access. In addition, the land is undeveloped. The challenge with this location is a slight grade and surrounding ecological preserves which create difficulty for connecting roads for shuttles to and from the airport.

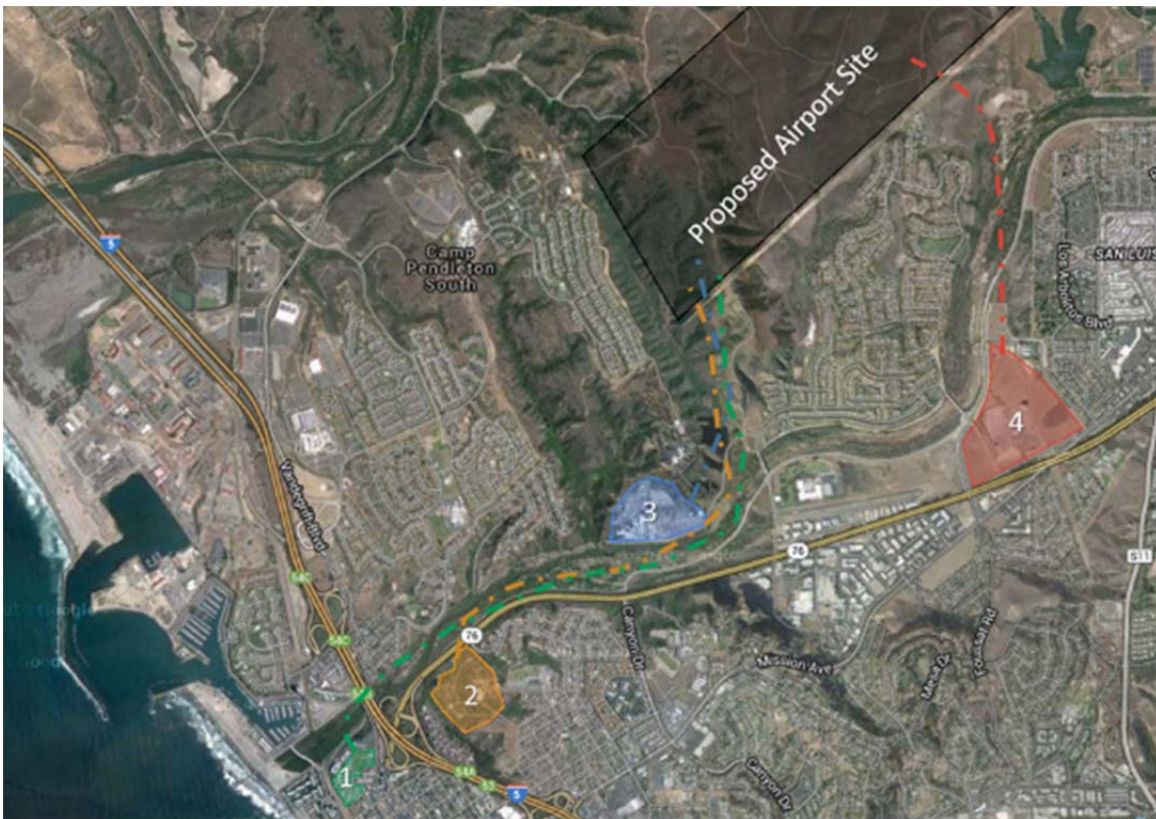


Figure 3.3: Recommended check-in/parking site.

The location of site 3 (43.2 acres) has the benefit of direct access to the airport with no penetration of ecological preserves. The current businesses in this location include cement and salvage yards and may be easily purchased. Despite this area being on a hill, it is effectively terraced, allowing for less intensive and costly construction. The challenge for this site is the need to extend or construct an access road from SR-76.

The location of site 4 (86.7 acres), an old drive in movie theater, which is used for swap meets as well as traveling events that could easily be repurposed. Location 4 provides direct access to SCIA and is also directly adjacent to SR-76. In addition, it is easily accessible through Foussat Road. One issue with this location is large residential areas to the west, but can be easily be mitigated.

Chapter 4: Employment and Multiplier Effect

Introduction

This chapter examines the regional economic effects of the proposed Southern California International Airport to be built on or near Camp Pendleton in North San Diego County. According to the Airports Council International – North America (ACI-NA), “America’s commercial airports are powerful economic engines generating billions of dollars in annual activity, and supporting millions of good, stable jobs” (“The Economic Impact of Commercial Airports”, 2014). Approximately 9.6 million jobs are supported by airports in the United States and 1.3 million people work at U.S. commercial airports. This equates to approximately 7% of the jobs in the U.S. All U.S. airports combined have an output of \$1.1 trillion, representing about 8% of the U.S. gross domestic product (GDP). Airports are important resources for travelers and an even more important engine for cities and states to support job creation and growth.

The following sections analyze the direct employment opportunities brought about by construction and on-airport activities. Then, it will expand to consider the impacts of indirect and induced employment and economic development on sectors served by and serving the airport.

Research Questions

This report addresses two broad research questions:

1. How will the new airport affect employment while it is being built and when it is operational?
2. How will the jobs created affect the local economy and the local, state and federal tax bases?

Building a new international airport will bring thousands of construction jobs to the region. This report estimates the number of construction jobs created during the construction of the airport facility, as well as the costs of construction, including payroll. With this information, the local economic impact from the construction project on local housing, food and entertainment providers will be estimated, as will state and federal tax contributions.

Once built, the fully operational airport will employ thousands of new onsite employees. Examples include pilots, security, immigration, customs, air-traffic control, flight attendants, vendors, and other airport employees. This report estimates the level of the on-airport employment that would be generated by the proposed airport. Beyond commercial air travel, the proposed airport will also play a vital role in cargo transport, generating additional cargo-related employment. The report projects the number of cargo-related jobs created by the new airport. It then assesses the economic impact these employees will have on the local economy, as well the local, state, and federal tax bases.

Establishing a large international airport in North County would greatly impact small businesses and create an influx of new businesses, including hotels, gas stations, retail, parking, auto rentals, among others. The increase in business for existing and new companies will continue to fuel the economy, eventually generating enough revenue for businesses to expand. This surge of jobs creates is expected to increase spending, stimulating economic growth and employment opportunities in other industries, therefore establishing the multiplier effect. This report also estimates the resulting impact on the local economy surrounding the targeted region.

Methodology

The team conducted secondary research using multiple resources and benchmark studies. The benchmarks for direct employment are the airports in cities with similar demographics and geographic characteristics that have been built within the last few decades. In particular, The Denver International Airport (DIA) is the most recent international airport that has been built and will be used as a major reference to assess the demand for construction, as well as the impact of construction employment in the region.

The current San Diego International Airport recently underwent a large terminal expansion project that was also considered in the analysis. The average hourly wage and annual salary of construction workers in San Diego was found through The Bureau of Labor Statistics. The Business Analyst Online tool from ESRI's arcGIS software was used extensively to examine the spending habits of residents and housing availability within a five-mile radius of the proposed airport site. This helped to estimate the local economic impact of the workers expected to travel to the region to work on the airport construction project.

A survey of the major airports in California, conducted by the Applied Development Economics (ADE), helped estimate the direct employment impact on the region (Appendix

4.1). According to this study, the current employment at all the major airports in California is estimated at 117,000 (Economic Impact Study of California Airports, 2013). The detailed employment impacts from various job categories at the proposed airport were studied. The report also consulted the recent economic impact studies, prepared for the neighboring airports, as benchmarks against which to measure and estimate the future growth rate of employment at this airport.

Using insights from other employment impact studies, statistical model software such as Crystal Ball and statistical methods such as regression were used to model and forecast personnel needs for a new airport. A recent study shows that the correlation coefficient between on-airport employment and total number of passengers is as high as 0.95. This shows a high correlation between the two factors. This correlation can be utilized to estimate the employment statistics from the total number of passengers. Crystal Ball software, which is an application suite for predictive modeling, forecasting, simulation and optimization, is used to estimate the total number of passengers for the new airport.

In order to estimate the number of businesses required to support the new airport's operations, a benchmark airport was needed for comparison. San Francisco International Airport (SFO) was selected due to its operational similarities to the proposed airport. The Business Analyst Tool ESRI's arcGIS software was used to map out the number of businesses in the area surrounding the airport. Contrasting the amount of business surrounding SFO with its population produced a ratio that was used to gauge the potential off-airport employment growth around SCIA. The software was also used to retrieve the average disposable income for the population near SCIA. This, along with numbers from the San Diego Tourism Authority, was used to estimate the possible cash flow back into the local economy.

Analysis and Results

Construction Costs and Employment

To determine the number of employees needed during the construction phase of the new airport project, data from the Denver International Airport build and the recent Green Build project at the San Diego International Airport were used. The Green Build project is the most recent upgrade to the San Diego International Airport, completed in 2013. The Green Build project included numerous substantial upgrades to Terminal 2, including 10

new gates, a dual-level roadway for separating inbound and outbound traffic, enhancements to curbside services and security checkpoints, and many new dining and shopping options. This project was completed on time and under budget. According to the Green Build fact sheet, a total of 7,000 construction workers completed the project over four years (Historic \$900 Million, 2013).

The Denver International Airport was opened in 1995 after six years of construction. This project is the most recent full construction project of an international airport in the United States. The Denver International Airport consists of six runways, three times as many as the proposed airport. DIA employed 11,000 construction workers for that project.

When comparing the employment and construction time frames for the two projects used for benchmarking, it seemed reasonable to assume approximately 11,000 workers would be needed, and a ten-year construction timeframe, for the proposed airport. Although DIA is larger than the proposed airport, it was built from the ground up, much like the proposed airport will be. Since the proposed airport is also in a slightly more populated area, and would necessitate close involvement with the United States Military, the prediction that the project would take ten years was used. This conservative estimate includes additional time for negotiations between the Military, federal, state, and local officials and organizations. Regarding employment numbers, the San Diego International Airport's Green Build project was small in comparison to the building of DIA but required over 60% of the DIA's construction employment. Due to this, and the fact that the construction of the proposed airport will be far larger than the Green Build project, having 11,000 construction workers seemed realistic.

Construction Employees & Wages

Projected construction costs were used from the EAS 2013 report. Those projections went through the year 2030. For the current project, it is assumed there will be a construction start date of 2030 with a completion date of 2040 (10 years). To find the projected construction costs over the 10 year period, the projected cost in 2030 of \$19,983,456,136 was inflated and amortized over the 10 years. The amortization charts are in Appendix 4.2. Table 4.1 shows the comparisons of the three airport projects. Initial construction costs were calculated in 2013 dollars and adjusted to 2040 dollars.

Project	Years to Complete	No. Of Employees	Construction Cost (2013)	2040 Cost Estimation
SAN Green Build	4	7,000	\$907,000,000	\$1,766,654,616
Denver International Airport	6	11,000	\$7,337,228,346	\$14,291,453,506
*Southern California International Airport	10	11,000	\$7,251,341,284	\$22,493,501,189 Inflation: 2.5%
<i>*Estimated</i>				

Table 4.1: Construction comparisons between the SAN Green Build, Denver International Airport and the projected airport.

According to the Green Build project fact sheet, 45% of the cost of the San Diego International Airport upgrade went to local and small businesses (Historic \$900 Million, 2013). Since the proposed airport is relatively close to the existing San Diego International Airport, it would be easy to assume that many of the same local construction companies could be used for the proposed airport construction project. Using the more realistic cost assumption from the table, the 2.5% inflation rate, approximately \$10 billion of the total construction cost will go to local and small construction and support businesses. This supports the assumption that 45% of the construction workers (4,950) would be local. The other 55% of the construction workers, or 6,050 workers, would be transient employees who may relocate to the region for the duration of the project.

In 2013, there were approximately 46,150 construction workers in the San Diego-Carlsbad-San Marcos region (May 2013 OES, 2013). These workers earned an average wage of \$25.38 per hour and an average of \$52,780 per year (Occupational Employment, 2014). With the assumption that 11,000 workers would be employed over 10 years, the average payroll cost for the construction project would equal approximately \$11 billion. This was calculated by adjusting the 2013 annual wage to the equivalent 2030 wage values, using an inflation rate of 2.5% per year. Appendix 4.3 shows the breakdown of wages and payroll costs over the years 2030-2040. The average construction worker for this project would make per year \$91,142 on average, over the ten years.

Taxes, After-Tax Incomes, and Outward Economic Contribution of Construction

Using the salary data, the tax revenues generated by this project and the after-tax income of the construction workers as individuals and collectively whole, can be calculated. The California state income tax for the wages paid to the employees of the proposed airport construction project would be 9.3% plus \$2,240 annually (2014 California Tax, 2014). The average federal taxes would equal about 19%, or \$17,495 (2013 Tax Table, 2013). Table 4.2 represents the breakdown of the average annual salary to the amounts paid toward taxes

and the amount left over as after-tax-income. These tax calculations only take into account state and federal taxes and do not include specific individual’s filing differences and/or deductions. Also, in this report “After-Tax-Income” is used to refer to all of the remaining income after taxes are deducted.

	Individual	Total	% of Annual Salary
Avg. Annual Salary	\$91,141.80	\$1,002,559,800.00	-
California Income Tax	\$10,715.90	\$117,874,871.40	12%
Federal Income Tax	17,494.75	\$192,442,250.00	19%
After-Tax-Income	\$62,931.15	\$692,242,678.60	69%

Table 4.2: Break-down of state and federal taxes and after-tax-income for an individual and total employees.

According to this table, California can expect almost \$118 million in additional income tax revenue from the project per year. Similarly, the United States government can expect over \$192 million in tax revenue from the project per year. This equates to 31% of the individual construction worker’s annual income being spent on taxes. The local community can expect over \$692 million to potentially be spent on housing, food, entertainment, etc. by the construction workers, per year.

Figure 4.1 shows the values for an average construction worker’s annual expenditures by percentage and dollar amount. Four categories of expenditures were studied: food and drink (including alcohol), entertainment, housing, and other. In San Diego, annual personal expenditure percentages for those categories were 13.3%, 4.8%, 38% and 56% respectively (Consumer Expenditures, 2013).

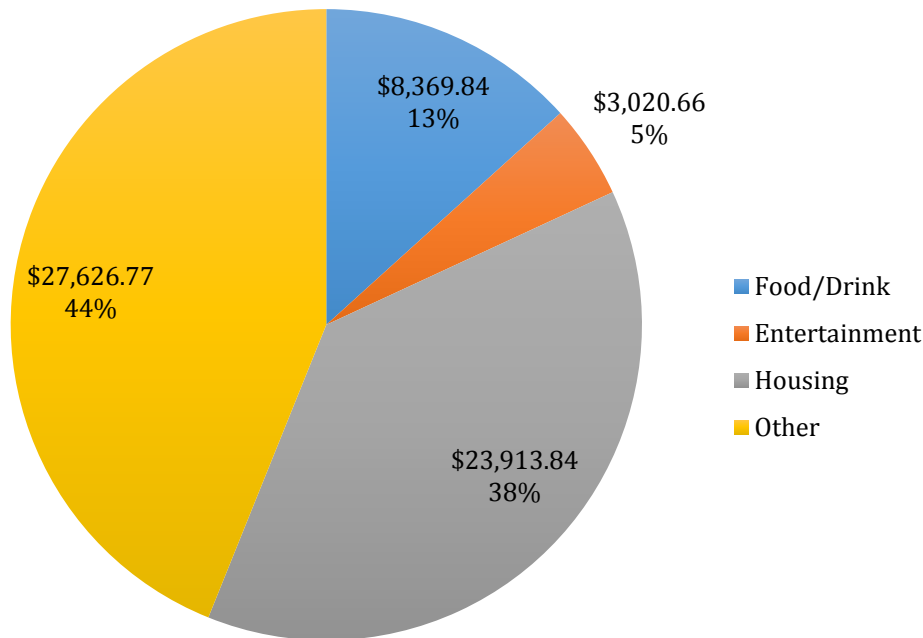


Figure 4.1: Approximate percentage and dollar value of after-tax-income expenditures per construction worker per year.

To factor in the multiplier effect of the construction workers, ESRI's arcGIS software was used to map out a 1, 3, and 5-mile radius boundary around the approximate site of the proposed airport (Appendix 4.4). This allowed for specific data collection in regards to business locations, employee, and population expenditures and habits. Table 4.3 shows the number of food/drink and entertainment businesses and employees directly affected by annual expenditures from the construction workers. These values are from 2014. These values are expected to increase as a result of the opening of the proposed airport before 2040. Figure 4.2 and Figure 4.3 show the arcGIS maps representing the food/drink businesses and the entertainment businesses within the 1, 3, and 5 mile radius of the proposed airport location, respectively.

	Percentage of After-tax-Income	Amount of After-tax-Income	Businesses	Employees
Food/Drink	13.30%	\$8,369.84	463	5599
Entertainment	4.80%	\$3,020.70	229	1361

Table 4.3: The number of businesses and employees potentially affected by a construction worker's after-tax-income within a five mile radius of the proposed airport.

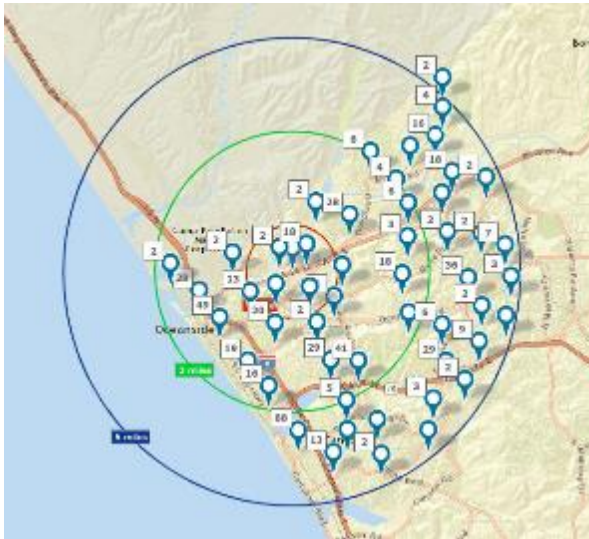


Figure 4.2: Food and drink businesses within a 1, 3, and 5 mile radius of proposed airport location.

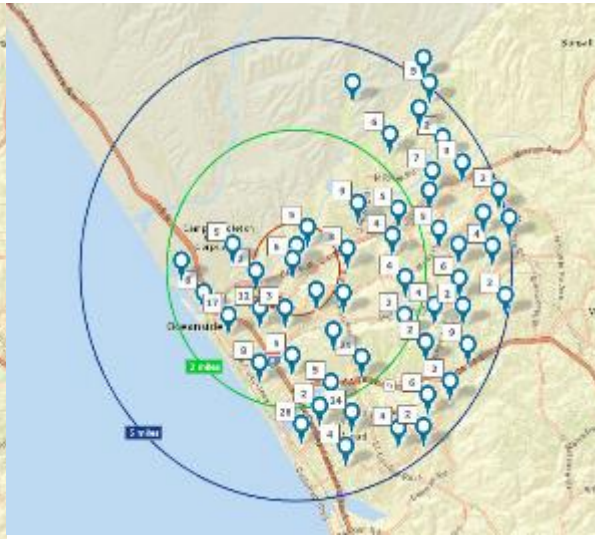


Figure 4.3: Entertainment businesses within a 1, 3, and 5 mile radius of proposed airport location.

It is projected that 55% of the construction employees will be transient, or from out of the area, and may need housing options close to the proposed airport site. Figure 4.4 shows the saturation of rental units within the 5-mile radius of the proposed airport location. Figure 4.5 shows the range of average rental prices within the 5-mile radius of the proposed airport location.

There are approximately 31,300 rental units within the 5-mile radius. The rental units on Camp Pendleton were not considered because non-military personnel will not be entitled to rent them. Total units from segments that were more than halfway outside of the 5 mile radius were eliminated from consideration. Of the remaining units, approximately 6,000 are expected to be vacant in the area, projected for the year 2019. Assuming the current Vacant Rental Unit to Total Rental Unit ratio will be the same in 2030, it would mean approximately 19% of the total rental units would be available at any given time. The average rent for this area was \$1,411. The rental units and average rent are current figures. Although the area within the 5-mile radius is relatively densely populated and may only have a slight increase in total rental units by 2030, it would be expected that rental prices would grow approximately 3% per year (San Diego Home Prices, 2014). That would equate to an average rent of \$2,264 in 2030.

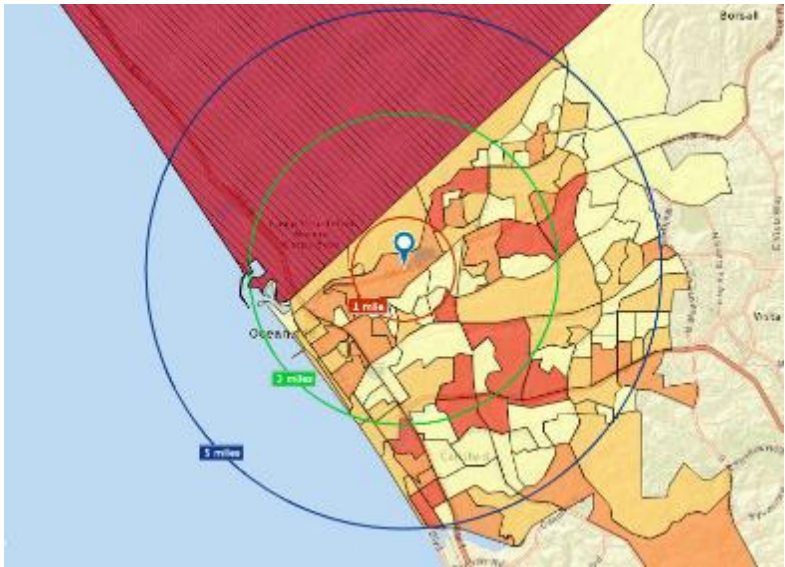


Figure 4.4: Rental units within a 1, 3, and 5 mile radius of the proposed airport location. The lightest colors represent the least saturation; darkest colors represent the most saturation.

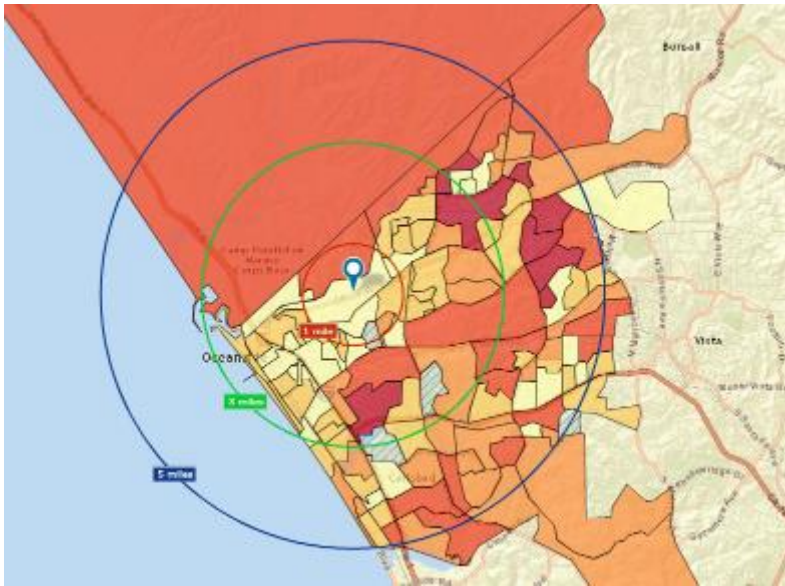


Figure 4.5: Average rental prices within a 1, 3, and 5 mile radius from the proposed airport location. The lightest colors represent the lowest prices; darkest colors represent the higher

On-Airport Employment

Regression Analysis

This section discusses regression analysis that examines the relationship between on-airport jobs and the number of total passengers. Crystal Ball, a statistical tool, is also used to predict the number of future passengers for the proposed airport.

Table 4.4 shows the number of on-airport employees and the number of passengers per year for ten major U.S. airports from across several states. This table shows 323,912 employees work on-site compared to around 412.65 million passengers flown through

them suggesting that around 785 on-airport employees are required for every million passengers. The fourth column of this table shows the density, which is defined as the number of passengers served by one employee. With the exception of SAN, the other nine airports show an average density of 1,296 whereas SAN has a density of 3,291. This information clearly reveals that SAN employees are serving more than double the number of passengers than many other major U.S. airports. Clearly, SAN seems to be under-staffed and has huge potential in terms of on-airport employment.

Regression analyzes the relationship between on-airport employment and number of passengers and assesses whether, and to what extent, they are linearly correlated. The number of passengers is an independent variable- y , and number of employees- x , is a dependent variable. The slope of the independent variable, m , defines the number increase in y for each additional unit increase in x . So, $y = mx$. It should be noted that the sample size for this regression analysis of national airports and the subsequent analysis of California airports are very small.

Airport	Employment	No of Passengers/Year	Density
Chicago O'Hare International Airport (ORD)	53,459	66,883,271	1,251
Los Angeles International Airport (LAX)	59,000	66,667,619	1,130
Dallas/Fort Worth International Airport (DFW)	60,000	60,436,266	1,007
John F. Kennedy International Airport (JFK)	36,620	50,423,765	1,377
San Francisco International Airport (SFO)	33,580	44,944,201	1,338
Newark Liberty International Airport (EWR)	19,700	35,016,236	1,777
Phoenix Sky Harbor International Airport (PHX)	32,870	40,341,614	1,227
Chicago Midway International Airport (MDW)	15,302	20,491,422	1,339
San Diego International Airport (SAN)	5,381	17,710,241	3,291
Oakland International Airport (OAK)	8,000	9,742,887	1,218
	Total=323,912	Total=412,657,522	

Table 4.4. Summary of on-airport employment-total number of passenger relationship for few major U.S. airports.

For the purposes of this study, the number of airport employees is regressed based on the number of passengers yielding the ANOVA table shown in Appendix 4.5. This ANOVA table shows that the correlation coefficient, ρ , between passengers and the number of employees is around 0.965. That represents a high correlation between these two variables. The team also investigated whether or not this strong correlation also holds for California airports. To test this, five California airports were selected and another regression analysis

was performed. Table 4.5 shows these five airports and their representative employment statistics, along with the total number of passengers for the year 2013 and 2012.

	Employment	Passenger 2013	Passenger 2012	Growth Rate
Los Angeles International Airport	59,000	66,667,619	63,688,121	4.7%
San Francisco International Airport	33,580	44,945,760	44,399,885	1.2%
San Diego International Airport	5,381	17,710,241	17,250,265	2.7%
Oakland International Airport	8,000	9,742,887	10,040,864	-3.0%
John Wayne Airport	5,400	9,232,789	8,857,944	4.2%
San Jose International Airport	2,987	8,783,319	8,296,174	5.9%
Sacramento International Airport	3,290	8,685,368	8,910,570	-2.5%

Table 4.5. Summary of employment-total number of passenger relationship for few California airports

For the regression analysis, the total passenger amounts from 2013 were used, yielding the ANOVA tables as shown in Appendix 4.5 (second and third tables). These tables show an even stronger correlation between passengers and the number of employees, with the ρ being 0.988. This implies that the projected on-airport employment for SCIA can be found by dividing the total passenger by the density factor.

To find out the number of passengers for SCIA, we considered SAN as a benchmark airport because of its proximity to the proposed SCIA airport. Currently SAN has one runway, whereas the proposed SCIA will have two runways. It is presumed that the proposed SCIA airport will eventually serve almost twice the number of passengers that SAN is capable of handling at its full operational capacity, however this will not be immediate. For the purpose of this study, it was projected that SCIA will operate at 133% of SAN, in 2040. Currently SAN is running at 63% of its operational capacity and it will reach an operational capacity constraint level by 2030. By estimating what SAN's passenger rate would be in 2040, if it had the capacity for the demand, could help us to estimate SCIA's projected passenger number.

To estimate SAN's passenger number in 2040 we followed two approaches. In the first approach, the growth rate of passengers from year 2012 to 2013 for the five California airports is measured, as shown in Table 4.6 and then, the average growth rate is calculated

subsequently which comes out to be as 1.9%. Using this average growth rate, we estimate SAN's passenger number in 2040 as,

$$p = \text{passengers in 2013} * (1 + r)^{27} \quad (1)$$

According to our assumption, the total number of passengers of SCIA, p' will be:

$$p' = 1.33 * p \quad (2)$$

Following this approach, p' was calculated to be 38,981,029 passengers. Dividing this number by the national density, we find the projected on-airport employment at SCIA to be 30,078.

In the first approach, it is assumed that SAN's average growth rate will remain the same for the next 27 years. However, that might be unrealistic due to other factors (i.e. economic boom or down-turn). This leads us to the second approach where the passenger growth rate R for SAN is assumed to be a random variable having a normal distribution. The standard deviation σ , and mean μ , was calculated for this random variable using the passenger data for SAN from the year 2006 to 2013. This data is presented in Table 4.6.

Year	Passenger
2006	17,481,942
2007	18,336,761
2008	18,125,701
2009	16,974,172
2010	16,889,622
2011	16,890,722
2012	17,250,265
2013	17,710,241

Table 4.6: Passenger number for SAN.

Assuming that the number of passengers at year i is V_i where the amount at the previous year $i - 1$ was V_{i-1} , the growth rate, R , is calculated as:

$$R = V_i - V_{i-1}/V_{i-1} \quad (3)$$

Using this equation, the mean growth rate is found to be as 0.24%. Next we calculate the variance of the growth rate using the following equation:

$$\sigma^2 = \frac{\sum(R-\mu)^2}{N-1} \quad (4)$$

Here, N is the total number of years for which the actual data are collected, in our case it is eight. Solving this equation, we find σ^2 to be as 0.0011011. The standard deviation, σ , was then calculated as the square root of this value, which is 3.32%. Crystal Ball software

was used at this point to predict the passenger value of SAN in 2040 using the σ and μ that we calculated in the aforementioned section, thus finding the passenger number to be 27,111,250. Using equation 2, SCIA passenger value P' equals 36,057,962. Dividing this value by national density tells us that the on-airport employment at SCIA will be around 27,823. This second approach is slightly more conservative, estimating 2,250 fewer projected employees than what was found by the first approach.

Taking the average of these two approaches we can predict that the projected on-airport employment at SCIA will be around 28,950.

Impact of Freight/Cargo on Employment

According to a study prepared by the California Airport Council (CAC) in 2011 (Annual Report, 2011), the commercial airports of California accounted for the movement of almost 3.5 million tons of air cargo. CAC also published in 2013 that in all California airports, around 117,398 employees were employed of whom 10,068 were directly involved in air cargo operations. This information suggests around 8.58% of the on-airport employment is actually related to the air-cargo related activities in California.

In 2013, SAN reached its maximum capacity for air-cargo tonnage. The proposed airport is around 30 miles north of SAN. It is reasonable to expect that the new airport will be expected to handle much of the unmet cargo handling needs of SAN. Moreover, the air-cargo traffic patterns at SAN and Ontario International Airport over the last few years show that cargo operation is significantly increasing in Southern California. This could be a result of the rapid population and business growth in this region. Because SCIA will be in the same geographical location, it would have the ability to transport a large share of Southern California's cargo. Table 4.7 shows the cargo (in metric tons) in 2012 and 2013 for a few major northern and southern California airports, presenting the average growth of air cargo transport as 0.13%. However, in a fairly recent study (Air Cargo Traffic in California, 2014) prepared by the Institute of Transportation Studies, the University of California Irvine predicts that the total air-cargo traffic in California will increase at an average rate of 5.9% during the upcoming years. Assuming that 8.58% of total on-airport employment is actually dedicated to cargo operation, Table 4.7 was also used to estimate the average cargo related employment figure for the five California airports studied. This resulted in approximately 347 employees per 100,000 metric tons of cargo transport.

Airports	Cargo 2013	Cargo 2012	Increase from Year 2012	Cargo Related Jobs
Los Angeles International Airport	1,747,284	1,780,998	-1.9%	5060
Oakland International Airport	484,092	481,280	0.6%	686
Ontario International Airport	417,790	412,661	1.2%	659
San Francisco International Airport	363,793	380,791	-4.5%	2880
San Diego International Airport	148,541	141,233	5.2%	523

Table 4.7: Air-cargo statistics for five California airports for the year 2012 and 2013

In the US, around four-fifths of all-air freight is carried by all-cargo carriers where only around one-fifth is generally carried by passenger/cargo combination carriers. FedEx and UPS are the two all-cargo carriers that dominate the parcel business. In recent years, these two companies have extended their hub-and-spoke model and established more regional mini-hubs. Ontario airport is one of the newly-established mini-hubs, which has increased Ontario's air-freight and air-freight related employment, in recent years. Our proposed airport will have two runways, similar to Ontario airport, thereby providing comparable air-traffic capacity. The proposed airport site is not densely populated, which decreases the probability of having a night curfew at the proposed airport. Having ample runway-space and connectivity to major highways are major factors that FedEx and UPS consider while establishing a mini-hub. By offering these features, the proposed airport is poised to forge strong partnerships with FedEx and UPS, thereby ensuring a huge air-cargo related off-airport employment opportunity.

Employment Categories

To help understand the economic effects SCIA would have on the Tri-County region's employment, California's existing airports were examined, as well as the employment opportunities each created. The CAC created an employment survey requesting information regarding the airport employment by job categories (operations, customers service, concessions, maintenance security, administration, etc.), and distributed it to all the airports within their council. According to their study, they found that there were a total of 117,273 people working at commercial airports within California. The survey also included questions to help identify various airport functions and the number of employees within each category, which was used in an effort to further examine the new employment opportunities that SCIA would create. Table 4.8 illustrates the categories of

on-airport jobs typical of most airports. The vast majority of them may be categorized as low or un-skilled positions. It should be noted that many of these on-premise workers are not direct employees of airports. Rather, they are employees of the airlines, cargo carriers, vendors, federal, local and state law enforcement agencies that serve the airport.

Airport Function	Total Jobs	% of employees	Position Type
Customer service	19,772	16.9%	Unskilled
Other	12,874	11.0%	Unskilled
Ground transportation	12,024	10.3%	Unskilled
Cargo Operation	10,068	8.6%	Unskilled
Security	9,854	8.4%	Unskilled
Fixed-base operations	9,121	7.8%	Unskilled
Ground support	8,986	7.7%	Unskilled
Retail/restaurants	8,277	7.1%	Unskilled
Aircraft maintenance/repair	7,816	6.7%	Skilled
Administration	6,619	5.6%	Unskilled
Terminal personnel	6,452	5.5%	Unskilled
Catering/airline meal preparation	2,821	2.4%	Unskilled
Air traffic control	2,589	2.2%	Skilled
Total	117,273	100%	15% Skilled

Source: ADE, Inc.; data from California airport survey data provided by Economic Impact Study of California Airports published March 1, 2013

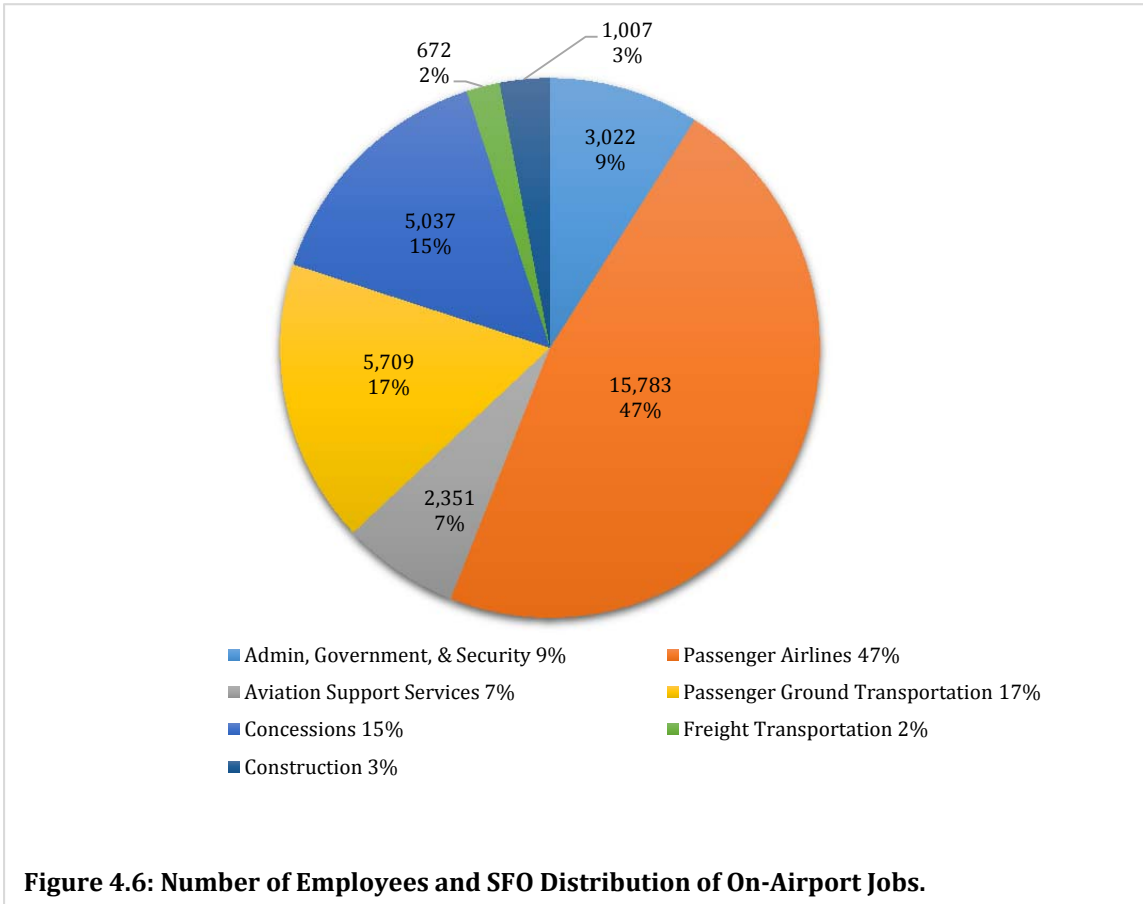
Notes: When survey responses were deemed incomplete, the missing data was filed using averages from the completed surveys. In cases where more detailed determinations could not be made, the jobs were classified as other functions.

**Table 4.8: California Airport Survey Findings
Total On-Site Jobs by Airport Location**

Based on the information in Table 4.8, airport jobs relating directly to aviation (aircraft maintenance, ground transportation, fixed-base operations, ground support, and cargo operations) represent almost 41% of on-airport employment. Airline personnel accounts for roughly 25% of on-site jobs, making the airlines the second largest creator of on-site jobs, including catering/airline meal preparation, customer service, and terminal personnel. Federally commissioned personnel (security and air traffic control) and other administrative positions compile 16%, while retail and restaurants make up 7.1%. The remaining 11% fall under the “other” category. This is where positions which proper categorization from the survey could not be determined where placed.

While Table 4.8 provides a general overview of the employment ratios for on-site airport employment throughout California, a closer look at a comparable California

international airport was necessary to get a more accurate look of the employment needs at SCIA. Figure 4.6 provides the employment distribution for SFO employees, according to an interview of tenants and airport administrators that were collected for the 2013 Economic Impact Study of SFO.



SFO was chosen as a benchmark because its current operation size and scope is similar to what SCIA is projected to be by 2040. SCIA is projected to have two runways and two terminals fully operational. SCIA will be located in a central area between San Diego County and Orange County. It will have the capability of and the expectation to handle international flights, specifically to and from the Asian Pacific region.

Figure 4.6 shows that at SFO, passenger airlines and passenger ground transportation constitute the largest employment categories accounting for 47% and 17%

of on-site jobs, respectively. Concessions account for 15%, and administrative, government, and security will account for 9%. These are followed by aviation support at 7%. There are distinct differences in wages depending upon positions held, particularly between skilled and unskilled workers. To further examine the economic effects these newly created positions would have in the Tri-County region, an average pay scale needs to be established.

Airport Revenues, Expenses, and Payroll

To better understand the employment opportunities and wages that will be generated by the creation and operations of SCIA in 2040, the revenue generation must also be examined. Appendix 4.6, 4.7, and 4.8 show the 2013 fiscal year Income Statements for San Diego International Airport, Los Angeles International Airport (LAX), and San Francisco International Airport. Table 4.9 illustrates that revenues generated by each varied from a low of \$1.8 billion (SAN) in revenues up to \$9.5 billion (LAX). The three airports showed similar patterns in expenses and the percentage of total expenses related to payroll. The density for each of the airports was calculated based upon the number of passengers each airport serves compared to the number of personnel employed, accounting for the large range in payroll percentages. At SAN, where the density is substantially lower than the national average, payroll only accounts for 21% of expenses. LAX, who had the second lowest density out of the 10 examined earlier in the study, had a payroll accounting for nearly 40%.

	Revenues	Expense		Payroll		Density
SAN	1,774,978,140	1,267,963,990	71%	380,924,640	21%	3,291
SFO	7,263,000,000	3,849,000,000	53%	2,392,000,000	33%	1,338
LAX	9,467,930,000	6,650,330,000	70%	3,717,080,000	39%	1,130
Averages	6,168,636,050	3,922,431,330	64%	2,163,334,880	35%	1,791

Table 4.9: 2013 Fiscal Year Revenue, Expenses, and Payroll.

To determine the value of wages that will be re-circulated in the local economy, two approaches will be used. In the first approach, the 2013 average revenue of three major California airports is calculated, as well as the average salary expense. The payroll percentage is then calculated and the appropriate inflation rates factored in. According to Table 4.9 the average revenue generation and recirculation, as of 2013, is \$6.2 billion. An average of 35% of this, or roughly \$2.2 billion, is expensed to salaries and benefits.

Assuming that annual sales remained consistent and the cost of inflation over the next 25 years remains at approximately 2.5%, a centralized international airport in California will generate annual revenues of \$13 billion. Using this approach, if the payroll and benefits were to continue at an average of 35% of total expenses, the average payroll and benefits expense will nearly double to \$4.3 billion by 2040. The recirculation of on-site wages will have a dramatic impact on the local economy.

In the second approach, the same three airports were examined, taking into account their annual salary expenses as well as their 2013 employment numbers. The number of employees is divided into the salary expenses, to calculate the average wage per employee, again, factoring appropriate inflation rates. This calculation provides the projected average wage per employee in 2040, which is then multiplied by the projected number of employees that was calculated in the regression analysis – thus providing the projected payroll expense for on-site airport employees. According to the data collected from the 2013 Annual Financial Reports, SAN has 5,381 on-site employees, SFO has 33,580, and Los Angeles International Airport (LAX) has around 59,000. Comparing the number of on-site personnel each airport employed with their respective payroll and benefit expenses, the average wage per employee ranged from \$63,000 to \$71,223 depending on the location, with a mean of \$68,342. Table 4.10 provides a breakdown of the average wages per employee. It is important to note that this figure is an overall average of all employees and does not take into account the wide range and variations in pay based upon skill and position.

Airport	No. of Employees	Salaries & Benefits	Average Wage per Employee 2013
SAN	5,381	\$380,924,640	\$70,791
LAX	59,000	\$3,717,098,000	\$63,002
SFO	33,580	\$2,392,000,000	\$71,233
SCIA*	28950	\$1,978,508,947	\$68,342

Table 4.10: Average On-Site Employee Wage.

Continuing with the earlier assumption that inflation will average a 2.5% increase, year over year, for the next 27 years, Table 4.11 shows the anticipated average wage per employee in 2040 is \$133,116.

Airport	Annual Wages (Average per Employee)							
	2013	2014	2015	2020	2025	2030	2035	2040
SAN	70,791	72,560	74,374	84,148	95,206	107,716	121,871	137,886
LAX	63,002	64,577	66,191	74,889	84,730	95,864	108,462	122,715
SFO	71,233	73,014	74,839	84,674	95,800	108,389	122,632	138,747
SCIA*	68,342	70,050	71,802	81,237	91,912	103,990	117,655	133,116

*Projections based on averages of the airport wages listed above

Table 4.11: Projected Wage Increases with Anticipated Inflation estimated at 2.5%

Using the regression analysis and the projected number of passengers for SCIA that were discussed earlier, Table 4.12 shows that the projected number of airport employees in 2040 would be 28,950. Using this projected number of employees and factoring in the expected average yearly salary earned per employee as seen in Table 4.11, it is projected that in 2040, SCIA's combined yearly wages would be \$3.8 billion. The results of the two approaches showed estimated wages of airline employees for 2040 to fall between \$3.8 and \$4.3 billion. Therefore, for the remainder of this section, an estimated \$4 billion will be used for simplicity.

Airport	2013	2014	2015	2020	2025	2030	2035	2040
On-airport Employment: Approach 1	18,175	18,517	18,866	20,711	22,736	24,044	26,892	30,078
On-airport Employment: Approach 2	18,175	18,218	18,280	18,893	20,043	21,813	24,338	27,823
Projected On Airport employment*	18,175	18,367	18,573	19,802	21,389	22,929	25,615	28,950

*taken from average of two approaches discussed in the regression analysis

Table 4.12: Projected employment growth for SCIA (in 5 year increments).

Taxes, After-Tax Incomes, and Outward Economic Contribution of On-Airport Employees

The same approach that was used in estimating the after-tax income for construction workers was used to determine the after-tax income for on-site employees at SCIA. The total California state income tax would be roughly 12% or \$15,974 annually, and the federal taxes would average 19% or \$25,292 annually. Table 4.13 shows the breakdown of these taxes and shows the remaining after-tax income for the average SCIA

employee, and the combined after tax income for all employees, available to be spent in the Tri-County Region.

	Individual	Total Yearly Wages	% of Annual Salary
Avg. Annual Salary	\$133,116	\$3,853,708,200	---
California Income Tax	\$15,974	\$462,444,984	12%
Federal Income Tax	\$25,292	\$732,204,558	19%
After-tax-Income	\$91,850	\$2,659,058,658	69%
		Total Taxes	31%

**Tax calculations only take into account state and federal taxes and do not include specific individual's filing differences and/or deductions*

Table 4.13: Breakdown of state and federal taxes and after-tax-income for individuals and total on-site airport employees per year.

Regional Economic Impact

Air Travel among Current Residents of the Tri-County Area

The proposed location for SCIA in the Oceanside/Carlsbad region will allow convenient access from interstates 5 and 15 and state routes 78 and 76, connecting the Tri-County region. Currently, the area is home to roughly 2.2 million residents who are forced to travel distances in excess of 30 miles to reach domestic airports like SAN and Ontario, and greater distances, up to 100 miles, to reach LAX, Southern California's only major international airport. As discussed in chapter one of this study, the income for the average airport traveler is approximately \$100,000 in 2013. Assuming that after tax income is about 69% of gross, and projecting a higher level due to inflation in future years, we would expect additional multiplier effects of the airport as the Tri-County region traveling public will be spending more of its estimated \$1.5 billion in travel dollars closer to home.

The Multiplier Effect

The creation of a new international airport in the Tri-County region will bring in a large number of people, both travelers and on-airport employees. In order to support these two groups, new businesses will need to be created in the area surrounding the proposed airport. This portion of the study examines the potential growth of employment in the Tri-County area once the new airport is fully functional, and it estimates the eventual impact to the regional economy.

Because SCIA is projected to become the main international airport, rather than SAN, this section of the study used SFO again as the comparable airport to benchmark upon. As stated earlier in the report, SCIA is also anticipated to have similar operations as SFO, in terms of scope and size. To explore SCIA’s potential economic development, the area surrounding SFO will be paralleled to the Tri-County region.

Using ESRI’s arcGIS Business Analyst Online tool, an outline of the area surrounding SFO was created to outline the region containing the neighboring, supporting businesses (Figure 4.8). The area within the 30-mile constraint was examined and its business summary data was extracted and ordered by NAICS code (Table 4.14). This included the numbers of all major business types and their employees in San Francisco’s mature employment market.

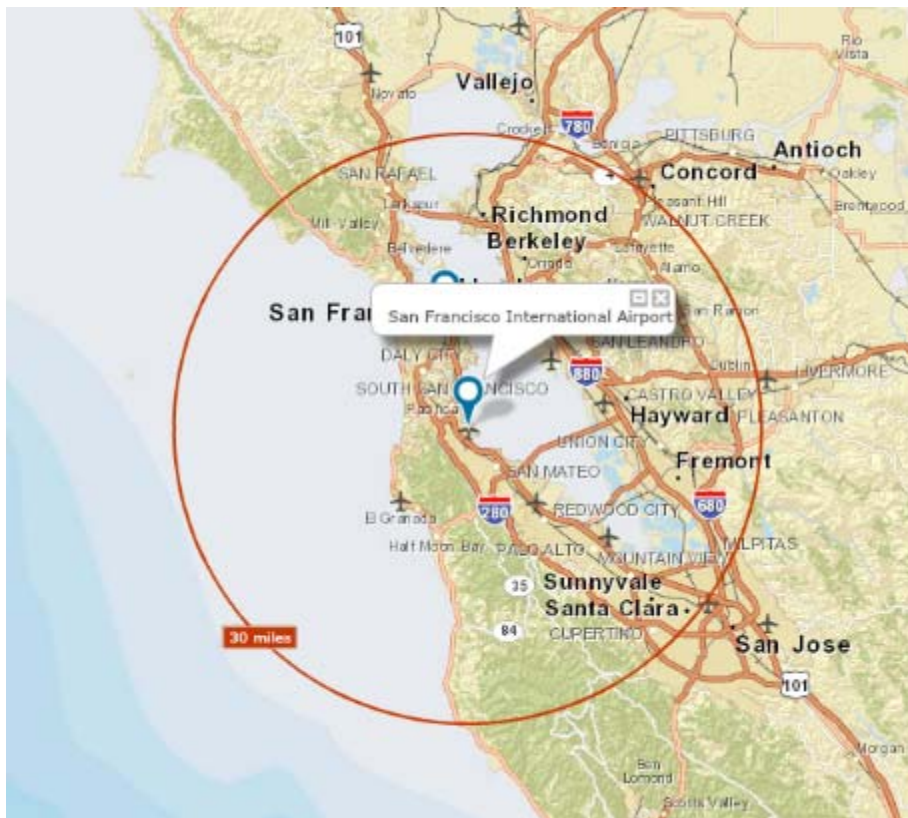


Figure 4.8: Region containing businesses supporting SFO.

By NAICS Code	Businesses		Employees	
	Number	Percent	Number	Percent
Agriculture, Forestry, Fishing & Hunting	1,444	0.4%	5,236	0.2%
Mining	135	0%	1,677	0.1%
Utilities	294	0.1%	7,393	0.3%
Construction	23,210	5.9%	106,112	4.2%
Manufacturing	13,205	3.3%	255,103	10.1%
Wholesale Trade	15,134	3.8%	100,872	4%
Retail Trade	29,262	7.4%	302,017	12%
Transportation & Warehousing	6,365	1.6%	61,491	2.4%
Information	11,070	2.8%	120,662	4.8%
Finance & Insurance	17,946	4.5%	120,320	4.8%
Real Estate, Rental & Leasing	15,826	4%	70,155	2.8%
Professional, Scientific & Tech Services	58,731	14.9%	329,320	13%
Management of Companies & Enterprises	1,130	0.3%	4,792	0.2%
Administrative & Support & Waste Management & Remediation Services	46,440	11.8%	172,843	6.8%
Educational Services	8,348	2.1%	142,335	5.6%
Health Care & Social Assistance	28,427	7.2%	224,152	8.9%
Arts, Entertainment & Recreation	6,279	1.6%	34,734	1.4%
Accommodation & Food Services	16,287	4.1%	144,515	5.7%
Other Services (except Public Administration)	32,453	8.2%	125,664	5%
Public Administration	2,718	0.7%	196,654	7.8%
Unclassified Establishments	59,803	15.2%	1,078	0%
Total	394,507	99.9%	2,527,125	100%

Table 4.14: Types of supporting businesses near SFO

Table 4.14 above illustrates the various businesses that are supported by an operational airport but all of them do not directly support the airport's operations. Two job

classifications from the list seem most directly related to supporting the airport: Transportation & Warehousing, and Accommodations & Food Services. These two categories account for 2.4% and 5.7% of the total jobs within the 30-mile radius of SFO. In total, they account for 206,006 jobs. With an expected level of traffic on par with SFO, it is reasonable to expect that as many as 206,006 jobs within these two sectors, many but not all of which will be new, will be needed to serve SCIA. Currently in the SCIA area, the local hotel industry, for example, is made up primarily of small motels. The opening of a major airport will undoubtedly attract more Accommodations & Food Services and Transportation & Warehousing businesses to the local region. Thus, it is reasonable to expect, by conservative estimates, that the new airport will bring between 100,000 and 200,000 new offsite supporting jobs to the region. This number compares well to the 183,878 new offsite jobs created when the Denver Airport began operations (The Economic Impact of Denver International Airport, 2013).

Aside from the number of off-airport jobs that SCIA will create, the induced economic impact will describe the amount of cash flow from the employees back into the local economy, thereby establishing the multiplier effect. Assuming that the average salary for these new hospitality and transport businesses is \$50,000 (in 2013 terms), and that 69% is the after tax income, the additional money circulated in the local economy by these new employees can range from \$3 billion to \$7 billion additional dollars (Table 4.15).

<i>Average Salary</i>	<i>\$50,000</i>	
New Jobs	100,000	200,000
Total Income	\$5,000,000,000	\$10,000,000,000
<i>Percentage of Income After Taxes</i>	<i>69%</i>	
After Tax Income	\$3,450,000,000	\$6,900,000,000

Table 4.15: Multiplier effect into local economy from accommodations and food services and transportation and warehousing jobs.

Opportunity Loss from Asian Markets

With the traveling market from China growing rapidly, San Diego faces a significant opportunity loss if they do not develop an airport with runways large enough to handle the larger international aircraft. In 2013, the non-profit organization Visit California invested \$4.5 million in efforts to capture the Chinese market alone. This section will evaluate the

dollar amount that San Diego risks to lose due to the lack of an upgraded international airport.

In the “China Ready” presentation provided by Visit California and the San Diego Tourism Authority, the weekly airlift from China to California was outlined (Table 4.16).

Airport	Airline	Flights*	Seats*	Cities Served
LAX	Air China	14	4,330	Beijing
	American	7	1,667	Shanghai
	China Eastern	7	2,254	Shanghai
	China Southern	7	3,542	Guangzhou
	United	7	1,466	Shanghai
SFO	Air China	7	2,239	Beijing
	China Eastern	7	1,848	Shanghai
	United	16	5,598	Beijing, Shanghai, Guangzhou
TOTAL		72	22,944	

*Average Weekly

Table 4.16: Airlift from China to California.

According to Table 4.16, there is a weekly average of 72 flights and 22,944 seats to California from China. This equates to 864 flights and 275,328 Chinese travelers yearly. The Beijing K&D Consulting Company created the Chinese Visitors to California report that states 12% of the Chinese travelers to California go to San Diego. Table 4.17 outlines the potential revenue from Chinese travelers to San Diego.

The Chinese Market	
Travelers to California	275,328
Percent going to San Diego	12%
Travelers to San Diego	33,040
Average Spending per Traveler	\$2,500
Total Spending in San Diego	\$82,600,000

Table 4.17: Annual spending by Chinese visitors in San Diego

With 33,040 Chinese travelers to San Diego spending \$2,500 per visit (China Ready, 2014), San Diego stands to lose \$82.6 million annually in economic opportunity revenue without an airport that can handle larger scale international aircraft.

Conclusion

Although an exhaustive project to build a new international airport, the influx of jobs and wages will benefit the community. The after-tax-income that the construction workers alone would bring to the economy is \$692 million. Once in operation, the on-site employment will create around 30,000 new jobs bringing average salaries of \$133,000. After taxes, this puts another \$4 billion back into the local economy each year. Also, the airport will create an immediate impact of over 200,000 jobs in support industries, and up to \$7 billion worth of salaries being re-circulated into the region's economy, enabling new business opportunities and employment growth. There is also a substantial opportunity from Asian visitors, with the potential of over \$82 billion being spent in the region, as a result of a new international airport.

CHAPTER 5: POLITICAL CONSIDERATIONS

Introduction

A new international airport in North San Diego County will serve a great unmet need for travel to and from the region and presents many opportunities for economic growth. However, an undertaking of such magnitude requires the cooperation of many key stakeholder groups that have vested interests – and potentially grave misgivings – to such a project. This chapter identifies these key stakeholder groups and their particular concerns, which have the potential to create many political obstacles that will need to be overcome if the project is to even begin.

The 2013 CSUSM MBA Exploratory Airport Study (2013 EAS) identified influential stakeholders at the city, county, state, and federal levels. Included among them were Oceanside City Council, San Diego City Council, San Diego County Regional Airport Authority (SDCRAA), Caltrans, Base Realignment and Closure (BRAC) Commission, Navy/Marine Corps, and environmental groups. The next phase of this project analyzed strategies for addressing the concerns of these stakeholder groups.

Beyond those stakeholders identified in the 2013 EAS, there are other important stakeholders at the federal, state, county, and municipal levels that will weigh in on decisions affecting the airport project. Examples include the Governor of California as well as the state delegation to the U.S. Congress, county and city governments. Beyond governmental organizations, local civic organizations, industry groups, and chambers of commerce of impacted cities in North San Diego. The 2014 EAS study expanded to encompass the Tri-County Region, including Southwest Riverside, and South Orange counties. Key stakeholder groups from these regions needed to be identified and included in this study.

The major objectives of this project were to identify the key stakeholder groups, assess their major concerns surrounding the building of an airport at the proposed location, and develop strategies and methodologies to address those concerns.

Thus, the project proceeded in three stages:

1. Identifying key influence groups,
2. Interviewing appropriate representatives of those groups.
3. Identifying existing cross-county partnerships and recommending strategies for building upon them

Research Questions

This study answered the following questions from the perspective of stakeholder groups:

1. Who are the key political stakeholders at federal, state, and regional levels?
2. What are the attractive features of bringing a major international airport to the MCB Camp Pendleton area?
3. What are the drawbacks?
4. What are the alternatives?
5. What political strategies can influence the key stakeholders?

Methodology

Primary data was collected from a sample of key stakeholders who will affect and be affected by the proposed airport project. Using in-depth interviews based upon the five questions listed above, the goal was to identify and analyze patterns of common appeals and concerns across stakeholder groups.

Many secondary sources were used to further study the political impact an international airport would have on the community. There has been high interest in this area for a number of years allowing the study to reap the benefits of abundant prior research.

Combining both types of data allows for a greater breadth of information while providing the most in-depth coverage of benefits, drawbacks and alternatives to building an international airport in the MCB Camp Pendleton area. The analysis provides the basis for a set of recommendations that comes at the end of the report.

Data Collection

The majority of the data was gathered by interviewing key political stakeholders and asking a set of questions designed to effectively utilize limited time restrictions, maintain consistency and maximize the value of data. Whenever possible, the interviews were performed in person; however, due to complications in the stakeholders' calendars, some of the interviews were completed over the phone or via email.

Description of the Sample

The interviewees consisted of a sampling of representatives from the business community, chambers of commerce, governmental agencies, and political organizations. The Office of Community Engagement at CSUSM has close ties with many organizations throughout the Tri-County region. The team consulted the Vice President of Community Engagement to identify the initial list of interviewees to contact. There were a total of 24 interviews consisting of approximately 35 individuals. Some of the individuals interviewed were at the front line level, while a greater number held positions at the executive level. The titles ranged from Clerk to Senior Policy Advisor to Vice Chairman. Although the sample was quite diverse, many of the opinions expressed were similar in nature.

Analysis

Detailed answers to the interview questions are provided in Appendix 4. For the purposes of reporting, the following sections are organized according to the five research questions listed above.

Key Political Stakeholders

According to the interviewees, there are many stakeholders involved in the building of an international airport; however, without the approval of key political stakeholders, no such project will come to fruition. The primary interview data collected during this study revealed a pattern in perceived key political stakeholders for building a new international airport near MCB Camp Pendleton. The primary interview data indicated the key political stakeholders include: the military at MCB Camp Pendleton, San Diego County voters, and the surrounding communities near the vicinity of the proposed building location.

Beyond the key stakeholders identified, the primary interview data also indicated other important stakeholders at the federal, state, county, and municipal levels. Included among these were the Federal Aviation Administration (FAA), U.S. Congress, the Base Realignment and Closure (BRAC) Commission, California Department of Fish and Wildlife (CDFW), San Diego County of Supervisors, and Tri-County regional businesses.

Military at MCB Camp Pendleton

It is no surprise that the Marine Corps, a branch of the military at MCB Camp Pendleton is one of the key stakeholders and the biggest political barrier for building a new international airport at MCB Camp Pendleton. The majority of respondents from the

primary interview data identified the military as a key stakeholder citing the fact that they own and are actively running military training and operations on the land.

According to the 2013 EAS, the land is owned by the federal government. This land is currently under the jurisdiction of the House of Representatives Armed Forces Committee, which has authority over the Department of Defense (DoD). The DoD holds authority over all branches of the military, including the Marine Corps, which is an organization within the Department of the Navy.

The primary interview data revealed a pattern among respondents indicating a unique and important feature of MCB Camp Pendleton is that it is home to the largest military amphibious training grounds. Due to the base's close proximity to Southern California's coast, this gives the Marine Corps a unique opportunity to conduct this specialized training. In addition, there are tens of thousands of Marines at the base, justifying the required space for air and ground training.

Several respondents from the primary interview data also indicated the specialized training Marines receive at MCB Camp Pendleton is essential to national security and west coast military readiness. Although there are objections to the plan for an international airport from ranking officers at MCB Camp Pendleton, the DoD policy of military airfield states that formal proposals are considered by the DoD and as long as they do not cause problems with airspace/traffic control, traffic mix, military activity, civil aircraft equipment/aircrew qualification, facilities, security, manpower, finance, or the environment, the inclusion of the international airport is still a viable option.

San Diego County Voters

Respondents from the primary interview data also indicated the public, specifically San Diego County voters, as key stakeholders in the proposed building of an international airport at MCB Camp Pendleton. All politics are driven by the voters; politicians do what the voters say. Voters want to know they have a voice and play a role in deciding the future of their communities. Politicians need to conduct interviews, gather data, analyze the information, and determine what the voter consensus is regarding the community, and in this case, the development of an international airport at MCB Camp Pendleton would likely go to ballot for approval.

According to the MCB Camp Pendleton website, more than 77,000 retired military personnel reside within a 50-mile radius of MCB Camp Pendleton and enjoy all the privileges to Base recreation facilities, commissary, exchange, and medical services. This

amount of retired military personnel would have a significant impact on voter views. In order to gain support from the voters, developers and planners would have to give voters compelling reasons why the inclusion of an international airport would be beneficial and a plan to not interfere with their current privileges. If there is no support from voters, the City Council will be less likely to support the project.

Community near MCB Camp Pendleton

Furthermore, respondents from the primary interview data indicated the surrounding community residents near MCB Camp Pendleton as key stakeholders. MCB Camp Pendleton is located in a rather rural area where there is only one populated area to its south; however, respondents indicated the proposal of building a new international airport could raise concern of noise pollution and increased traffic within the community.

The inclusion of an international airport would mean more commuter and pedestrian traffic in the area, causing longer delays in traffic and admission to the Base and proposed airport. One particular area of concern is the new Naval Hospital, which is right along the border of the 65 CNEL level. In order to truly evaluate, it will require further study and analysis to determine the consequences of noise pollution on the hospital. The increased automobile traffic and flights will greatly add to the amount of air pollution—drastically causing a decline in air quality and increase in noise pollution. These reasons may give communities and voters reasons to oppose the development of an international airport.

Other Stakeholders

Expansion or development of an airport is a long intricate process and involves a vast number of stakeholders. It would be negligent to focus only on the military at MCB Camp Pendleton, San Diego voters, and the surrounding community to make any decisions. Respondents from the primary interview data stated various agencies and organizations have a stake or play a role in the proposal and development of an international airport.

One such agency is the Federal Aviation Administration (FAA). While the FAA does not decide if a community should build a new international airport, it does ensure the proposal meets the required regulations. After approval, the FAA would manage the air traffic in the joint-use airfield. A representative from the FAA stated the following:

The FAA is not the correct entity to decide how a community (or region) can best meet its aviation demands. Airport planning is a local decision. Should a local governmental organization propose a new airport to FAA, our role would

to ensure that the proposal meets all required federal standards and also to independently evaluate the proposal under the NEPA.

In addition to the FAA managing the air traffic and ensuring all the required federal standards are met, the Base Realignment and Closure (BRAC) Commission ensures compliance with environmental laws, rules, and regulations. With the amount of money and planning and gaining support for the international airport, supporters and stakeholders would not want to have what happened at MCAS El Toro in 1999 to happen at MCB Camp Pendleton. Activities at MCAS El Toro led to waste oils, paint residues, hydraulic fluid, used batteries, and other wastes to become so abundant that it caused soil and groundwater contamination and ultimately the operational closure of the base. MCB Camp Pendleton is an essential hub where various federal departments and organizations gather to receive top training and cannot afford to end up on the BRAC Commission's list of closures.

In keeping with environmental regulations, the CDFW, EPA, and various conservation agencies oversee proposed projects to ensure the natural wildlife and plants are preserved. A simple concern such as endangered shrimp is enough to stop a project. Additionally, the California coast has a large amount of protected coastal land and this is especially true of the area close to the proposed location of the international airport.

Politicians wishing to remain in office and retain the support of voters are also likely to be concerned with the well-being of the wildlife and protected coastal areas. Men and women of the U.S. Congress and the San Diego County of Supervisors need to work together to develop plans that would accommodate and alleviate the fears of those on base and nearby. Regardless of the plan that is developed and followed, each department, office, or region will have varying levels of involvement and impact from the airport.

When considering a large scale project like an international airport at MCB Camp Pendleton, several respondents indicated the Tri-County region businesses must also be a topic of concern. Any project that negatively impacts local and regional businesses should not be implemented. The increase in the number of travelers and commuters are potential for an increase in business, revving up the local community. Conversely, if the inclusion of an airport at MCB Camp Pendleton negatively impacts the business operations at other airports in the region, further evaluation of the project should be considered.

In a proposed project such as the international airport at MCB Camp Pendleton, there are several stakeholders to take into account. Each group of stakeholders has reasons

to either support or oppose the project. The ways of convincing or retaining support vary when interacting and communicating with each of these groups. Based on information gathered from primary interviews, respondents suggested that MCB Camp Pendleton is not an ideal location for the international airport, but provided political strategies that may convince stakeholders that the airport is beneficial for all those involved.

Benefits

There are many benefits surrounding the proposed location for a new international airport that will support Southern California. Thirty-five respondents shared their thoughts on the viability of the success of this location. This report highlights the topics that tended to come up throughout the majority of the interviews.

Accessibility and Location

More than 87 percent of the respondents believed the accessibility and location of MCB Camp Pendleton would add to the allure of the airport. The MCB Camp Pendleton area is approximately midway between Los Angeles Airport (LAX) and San Diego International Airport (Lindbergh Field). This allows easier access for North San Diego, South Orange, and Southwest Riverside counties.

The plan to expand the North Coast Corridor will add to the attractiveness of the location as well. According to Nichols (2014), the proposed North Coast Corridor project still faces hurdles, but the freeway and Coaster expansion will provide hope for many frustrated commuters. Approximately 68 percent of the respondents commented that the new airport would mean that fewer people would have to commute to LAX or San Francisco International Airport (SFO) in order to fly internationally. The reduced commute time from all alternatives was a clear bonus for many respondents as well.

Because this location is a bit more remote from residential areas than some of the other locations previously considered, some respondents indicated that there would be fewer concerns surrounding noise and pollution. It was mentioned more than once by the individuals interviewed that further studies would be needed to truly ascertain the impact on the community.

Community Development

More than 80 percent of the respondents indicated that this location would benefit the local community in numerous ways. Some of the benefits were viewed as the ability to attract large businesses, tourists, and other means of economic growth as well. The thought

was that larger businesses would be attracted to the area if there was a more accessible airport for shipping and executive travel purposes. Tourism would grow if there was a more accessible airport as well. This would aid in growth in a multitude of areas. Because international travelers tend to stay in the area for longer periods of time, this would also be a benefit for the lodging, restaurant, and entertainment businesses in the surrounding areas.

Benefits Related to the Military

According to the Federal Aviation Administration (FAA) website (2014), there are currently 23 joint civilian/military (joint-use) airports in the United States: 12 Air Force, ten Army, and one Navy base. Each of these airports are all air bases rather than Marine Corps training bases. Respondents believe that the new airport would provide opportunities and challenges for the military. One benefit of the proposed location being on military land is that the airport would take up less than five-percent of the total acreage of MCB Camp Pendleton. The military base is located on approximately 125,000 acres and the proposed airport would need less than five or six thousand acres. Another benefit to the military is that an access gate could be built so that they could fly their personnel and cargo in and out of the base when needed. Most of them are currently flying out of LAX and that is viewed by some of the respondents as a bit unkind to our military men and women. Departing from an international airport located closer to or on base could provide additional security for military personnel. Additionally, about 40,000 Marine personnel and their approximate 90,000 family members could fly for personal travel with this airport.

Air Traffic Capacity

One of the most important benefits to relay is the fact that this airport will fulfill an important need. The region is expected to reach capacity in the near future for international flights and the alternatives are not encouraging. If this airport were to be completed before capacity is reached, it would be of great service to all of Southern California.

Drawbacks

The respondents identified more drawbacks than benefits of the new airport. That is not to say that the cons outweigh the pros; rather that the objections were numerous. This may be similar to the events in 2006 when Marine Corps Air Station (MCAS) Miramar was considered as a viable option. Most of the respondents and the subjects of the Union

Tribune article (Ristine, 2006) are from San Diego County. Very few of them responded positively, although they clearly did know a great deal about the benefits. Some of the more prevalent examples are noted in the Political Will section that follows.

Many of the interviewees in Orange and Riverside counties were far more likely to focus on the benefits of the new airport; however, they seemed to understand the drawbacks as well. The reason becomes clear as the interviews are examined. San Diego County's economy depends a great deal on its military installations and personnel. Many say the economy here is one part tourism, one part commerce, and one part military. Therefore, the very idea of moving or eliminating installations here seems patently absurd to many, even if that is not what is intended.

In identifying the following drawbacks, patterns emerged as to categories of responses, though a few overlap in places. The following is a rough grouping, beginning with the most recurring objections.

Military Objections

A large number of responses against the proposal have to do with military preparedness. MCB Camp Pendleton is the largest amphibious military training site in the U.S. The military viewpoint is that the only way an international airport could be located on the base is if the training stops. If the training is halted, the base will need to be closed or relocated. Therefore, the military will continue the fight to abstain from the development of an international airport on government land.

Respondents believe hundreds, maybe thousands, of military jobs would be eliminated or moved out of San Diego County if any part of MCB Camp Pendleton were converted to a commercial international airport. They believe that such result would be devastating to military families and to the economy as a whole. To illustrate, a similar situation occurred in Sacramento when Governor Schwarzenegger ordered a furlough on state workers in 2009 and 2010. Thousands of families missed out on billions of dollars of take-home pay, most often undergoing a 15 percent per month salary decrease for 18 months. This was particularly devastating to Sacramento during the economic downturn. A large number of businesses—especially low-margin businesses like the restaurants that depend on state worker customers—were forced into bankruptcy as a result. Many government programs were closed as a result of this downward spiral and the subsequent loss of tax revenue. As a Caltrans employee, one of the respondents experienced this first hand, explaining how terribly difficult a time that was for the whole family. She nervously

joked that she was considering moving to Sacramento's infamous 'Tent City' at the time. San Diego County is mired in an economic downturn, and residents—especially military families and the politicians that protect them—fear exactly that kind of scenario; perhaps rightly so. Most of the jobs that would be created as a result of the proposal would be temporary. A significant portion of the permanent jobs created would be service jobs, which tend to pay much lower than average. The overall employment created, opponents say, would not balance out the resulting loss of military jobs.

Economic Concerns

Aside from the above mentioned military concerns, the next most often discussed was the cost of building an airport of that magnitude, especially given the specific site chosen by previous studies. Building an airport is an expensive undertaking to say the least. The site on which this proposal is based is surrounded by mountains which would have to be leveled at great expense. The other question seems to be whether the new airport would truly increase traffic and income to and from the region, or whether it would just cannibalize traffic and income from other airports offering no net economic gain for Southern California.

Another concern was that it might be difficult to attract foreign visitors to an airport on a military base so close to a failed nuclear power plant. The concern then is whether airport administration would be able to position the airport as it would like, to project the image it has in mind. From there, the consideration is whether it would bring enough revenue to justify its high price tag.

Resident Opposition

The main concerns for local residents are twofold; they worry about noise pollution and traffic. These are the usual sources of opposition to airport proposals. Nobody wants airplanes to fly over their homes. One of the respondents familiar with Orange County and John Wayne Airport (John Wayne) notes that noise is the main reason more planes do not fly out of these locations - the same could be said for Lindbergh Field. John Wayne is very limited in that regard, he said, and that proposals to expand are met with fierce opposition every time, so nothing gets done. It goes without saying that traffic near a major international airport can be a nightmare; solutions would have to be provided. Even so, residents would fight to the bitter end to keep an airport out of their own backyard.

Environmental Impact

There are several endangered plant and animal species on MCB Camp Pendleton that would need to be evaluated, and many environmental groups would come out to fight against their destruction. Aside from various environmental groups, there are also many levels of government guidelines when it comes to the environment and its ecology. The Environmental Protection Agency (EPA) can halt any construction that would interfere with life on the endangered species list. There are other groups and agencies at the state and county levels as well that oversee projects to protect endangered plants and wildlife.

Another significant concern mentioned is that of pollution. Airplanes pollute the air, the land and the water wherever they fly; there is no getting around that. Environmental groups would have to be convinced that greening would be undertaken to level the net effect of such pollution. It is also possible that environmental groups might never be convinced, in which case enough stakeholders would have to be won over from other stakeholder groups so as to go ahead without their blessing.

Airport Site

While some saw the security benefits of co-locating a civilian airport on a military base, some of the respondents questioned whether it is even possible for a civilian airport to co-exist with a military presence as close as would be required in this situation. As previously noted, it has been done. In fact, the FAA has a Joint Use Policy as well as a list of airports that function in such a manner as previously reported in this study. It may be especially complicated to have separate military- and civilian-operated control towers, but it can be done.

There is also a question of space. Some of the respondents think there is not enough space for a second runway as required in the proposal, noting that the two runways would have to be situated three quarters of a mile apart.

Several respondents believe that the site is too far for most San Diego residents to drive to, especially those that live downtown or further south. That, of course, seems to be the case with every location that has been studied over the years. On the other hand, some of the alternatives that have been proposed are as far east as the deserts of Imperial County and as far south as Tijuana. The former would be even further, and the latter has a lengthy border crossing in between. As in the case of the proposed MCB Camp Pendleton location, there are many competing views on each of these issues.

Civilian Safety

One of the biggest concerns cited was that of civilian safety because the new airport will be located so close to artillery ranges. Conversely, civilian safety concerns might compromise the military mission. Thus, the real challenge is whether the military would be able to assure civilian safety while maintaining its training programs. It was also stated that the liability would be too great for the military to assume or even consider.

Topography was also discussed as a safety issue. The concern is that pilots would find it difficult to land at the proposed site given the surrounding mountains. This would be of particular concern for larger aircraft flying international routes. Of course pilots landing at many airports around the world face a difficult landing several hundred times a day with no problems. It was also mentioned that one of the benefits of shifting long-haul flights away from Lindbergh Field is that it avoids the issue of the difficult landing there.

Another safety concern is the proposed airport location being just 22 miles from San Onofre's failed nuclear power station. If anything happens to the nuclear waste that will continue to be stored there indefinitely, the airport might have to be abandoned. Then again, so might most of Southern California.

Political Will

The fight over where to build a newer and bigger airport in San Diego has been raging for many years now. It has already lasted much longer than construction anywhere would have ever taken. That trend is likely to continue into the foreseeable future. The military—visibly the largest stakeholder of all—has made it very clear they will never give up what they see as the good fight. In that light, for San Diego politicians to support any proposal that interferes with military operations is a non-starter.

Per the Union Tribune article (Ristine, 2006) cited earlier, many residents were quick to offer their point of view. As John Chalker of the Coalition to Preserve the Economy put it, "Dealing with airport siting issues is a no-win proposition for any elected official. You aren't going to make friends doing it either way." Former U.S. Representative and later Mayor of San Diego Bob Filner said, "You don't tell our Marines, you don't tell our brave soldiers that we're taking your base. Readiness, training, preparation, support for our troops revolves around keeping Miramar as a Marine air station." U.S. Representative Duncan Hunter said, "Now is the time for the Airport Authority to become creative, to quit having a set of blinders on that always points toward Miramar and to come up with some better options." U.S. Representative Susan Davis stated, "I think San Diegans want closure

on this issue. I think they'd like to see Lindbergh improved." Although there were many more quotes in the above cited article the point has been made that the public opinion was not in favor of an international airport based on MCAS Miramar. The findings are resoundingly similar today for an airport located at MCB Camp Pendleton.

Alternatives to MCB Camp Pendleton

Many of the individuals interviewed suggested that locations other than Camp Pendleton be considered for locating the new airport, including those explored in the 2013 EAS, which recommended the MCB Camp Pendleton location as the best site for a new airport to alleviate capacity constraints. The tri-county area identified in last year's study certainly would benefit from an airport located at the nexus of Riverside, San Diego, and Orange counties. Others, including many of the stakeholder groups represented by respondents, have different ideas beyond the specific location on the MCB Camp Pendleton site - several of which are nearby. This section presents some of the suggested alternatives including: expanding Lindbergh Field, expanding small municipal airports, considering other military bases in the region, and moving beyond tri-county to Imperial County or moving south of the border. While the EAS 2013 showed that neither of the other sites would be feasible, the suggestions offered by the interviewees are provided in the following sections to illustrate some of the arguments that may be used to oppose the plans for the Camp Pendleton site.

San Diego International Airport (Lindbergh Field)

SDCRAA and other various groups have stated further expansion of Lindbergh Field may be more feasible and realistic. The SDCRAA has stated that they have a commercial passenger optimization plan. The plan is broken down into four main parts:

1. Fully build out the intermodal transit center (ITC) and North Side Terminal at Lindbergh Field;
2. Preserve Lindbergh Field for commercial passenger service;
3. Up-gauge Lindbergh Field aircraft fleet mix - narrow body fleet; and
4. Up-gauge Lindbergh Field aircraft fleet mix - increased wide body fleet.

When it comes to maximizing the use of Lindbergh Field, there is a current plan to expand the ITC. This plan will accommodate 1.2 to 1.8 million passengers and will facilitate the building of more passenger processing facilities such as ticketing, baggage claim, and security screening stations. There are also large facility improvements planned such as

property acquisitions, expansion of automobile parking facilities, expansion of the consolidated rental car facility and modifications to the I-5 ramp. The projected cost of this project is somewhere between 1.2 and 1.4 billion dollars; however, this project can be funded from various sources such as bonds, private sources, passenger facility charges and rental car customer facility charges. Funding of the non-aviation elements is unlikely given the costs and minimal effects on airfield capacity.

For up-gauging the narrow body fleet, the airport authority would begin to encourage air carriers to reduce the use of regional jets or smaller aircraft at the airport. The focus would shift to more narrow body type aircraft with an average seat capacity of 140 seats. In order to increase wide body fleets, the airport authority would need to encourage air carriers to deploy large capacity aircrafts at Lindbergh Field. This would assume the future fleet mix will be comprised of 737, 757, and 767 aircrafts with at least half of the planes consisting of 737 planes with an average seating capacity of 180 seats.

McClellan-Palomar Airport (Palomar)

Chambers of commerce members, mayors, and other political stakeholders have mentioned McClellan-Palomar Airport (Palomar) and Brown Field Municipal Airport (Brown Field). These airports are primarily known for private and commercial travel. Some say these and other municipal airports in the area are underutilized, thus expanding on the municipal airports may be an option.

Another suggestion was to optimize the use of Palomar by providing facilities for multi-carrier passenger service. This alternative would be implemented through leasing and pricing strategies. The goal would be to make Palomar appear more attractive for commercial air service than Lindbergh Field. For this project to become a reality there would first need to be a 1,000 foot runway extension for a total length of 6,000 feet, which would require a bridge foundation due to the airfield being located on an old landfill location. There would also be a need for an 8,000 square foot passenger terminal expansion to enable the total square footage to reach 27,000. The other part of the plan includes building a 2,800 space automobile parking deck to enable the ground level vehicles to be stationed close by for passengers. The proposed plans at Palomar may sound feasible but further studies have shown that mainline jets could not use the facility due to irresolvable FAA runway-taxiway separation criteria. This constraint would ultimately harm future development because the fleet would remain restricted to regional jets. More extensive environmental review and approvals would also be required for runway expansion.

Brown Field Municipal Airport (Brown Field)

Brown Field was also mentioned as a site to enlarge rather than entertaining the cost of building a new airport. Similar to Palomar, Brown Field would require multi-carrier passenger service. This scenario would require a new passenger terminal building, access and entrance roadway improvements, approximately 2,800 automobile parking spaces, and facilities for certification to include items like security fencing and firefighting facilities. There would also be the need for various utility upgrades to be completed. Furthermore, the airfield would not restrict the type of aircraft operating at the facility, but service would most likely be provided by regional jets.

MCAS Miramar, March ARB, and Offshore Airport

Both active duty and retired military leaders have suggested taking another hard look at MCAS Miramar, March Air Reserve Base (March ARB), and the possibility of building an offshore airport.

In the 2013 EAS, MCAS Miramar was considered as a potential site for a new international airport. The study mentioned that in 2006, San Diego County Proposition A, proposed obtaining 3,000 acres of land at MCAS Miramar to build a commercial airport. The proposition vote resulted in 62 percent opposed to 38 percent in favor. March ARB is currently under the command of the U.S. Air Force and facilitates military and civilian travel on a daily basis. The Base Reuse Plan designates approximately 350 acres of land for civilian aviation facilities at the southern end of the airfield. An additional 200 acres west of the I-215 is intended to be used for commercial aviation through a military/civilian joint use arrangement. The Environmental Impact Statement (EIS) evaluated the environmental elements of the reuse plan and alternatives in accordance with the National Environmental Policy Act (NEPA).

The thought of constructing an offshore airport is not a new idea. In 2009, a company by the name of OceanWorks created a plan to develop an offshore international airport. The 2,000 acre, \$20 billion OceanWorks international airport would resemble a floating oil rig with hotels, restaurants and shops nestled underneath the actual airport. An onboard desalinization plant would supply the airport's needs and supply water to coastal cities, while a giant artificial reef would protect the surrounding wildlife. The airport would also act as a center of green power, harvesting energy from waves, wind, and ocean currents.

General Abelardo L. Rodriguez International Airport (Rodriguez International)

Many other stakeholders have stated that utilizing General Abelardo L. Rodriguez International Airport (Rodriguez International) in Tijuana would be another alternative to building an international airport in North San Diego County. Through utilizing Rodriguez International, there is the potential for cross border airport terminals, cross border facilities, a stronger emphasis on border crossings and a possible joint use through twin ports. This would imply utilizing U.S. terminals with the use of Mexican runways.

The next alternative suggested was expanding and further utilizing Rodriguez International. There are many projections that state Rodriguez International will increase from approximately 2.5 to 7.0 million annual passengers in response to the increasing demands. The first step in this project is to facilitate border crossings. There would be a need to improve the already existing Otay Mesa and San Ysidro international border crossings. A similar project was proposed in 2010 by San Diego Chamber of Commerce; however, that study was to increase access times and border crossing but not to promote a new border crossing. Key factors would include: decreasing border crossing times by about 40 percent from 45 minutes to approximately 25 minutes, increasing shuttle and bus service to Tijuana from Greater Los Angeles Metropolitan and San Diego locations, increasing air service to Mexican/International markets, and limiting increases in air service in U.S. markets.

The next step would consist of facility improvements at Rodriguez International including an upgraded terminal and concourses, possibly including items such as improved and refurbished concessions, hold rooms, and ticket counters. Another necessary addition involved the addition of a new airport bus terminal in order to accommodate additional passengers originating from the U.S. shuttle bus activity. The projected total cost of this alternative is approximately 30 million dollars with potential funding from a variety of sources including airline fees, U.S. Customs and Border Protection, and private developers.

A second utilization of Rodriguez International is the aviation passenger cross border facility (CBF). This project would increase the use of Rodriguez International for commercial passenger activity with the CBF allowing a U.S. ticketed passenger exclusive and convenient access into the airport. The CBF would operate similarly to a new pedestrian port of entry and would include vehicle parking, customs/border control, and a landside connection or bridge into the airport. Ticketing, security screening, and baggage handling

would remain on the Mexican side in the existing terminal building. A user fee to access CBF would be applied to all users.

There has also been talk of a Cross Border Airport Terminal. This would be located on the U.S. side of the border to facilitate processing of U.S. passengers utilizing Rodriguez International; however, it is assumed that this approach will only marginally alleviate the mid-term capacity constraint for about two years.

Expansion of Centralized Travel

Various organizations and business owners have suggested Imperial County and the expansion of the centralized existing airports by means of high speed rail and coaster travel. There have already been talks of expanding the I-5, so once the airport site is confirmed, different types of transportation from the various counties will become more important from both an environmental and traffic standpoint.

The California High Speed Rail (HSR) will create transportation to and from various cities within San Diego County. Under current plans, the southern end of the HSR corridor will terminate in San Diego County at the downtown Santa Fe Depot or Lindbergh Field. The HSR will begin closer to the Los Angeles Union Station and Ontario International Airport. The HSR can be used as an alternative or replacement for intra-California air travel or to access an airport within California.

There are also talks in place to expand the use of the COASTER that goes through San Diego. The COASTER commuter train travels breathtaking coastal scenery as it runs north and south through San Diego County, serving eight stations between Oceanside and downtown San Diego. More than 20 trains run on weekdays, with additional service on the weekends. It takes about an hour to travel the entire COASTER route.

Political Strategies

Based on the primary interview data collected, as well as the secondary sources cited, supporters of an international airport at MCB Camp Pendleton understand there is heavy opposition to the proposal; however, respondents did suggest various political strategies to win over enough support for the project or a similar alternative. Suggestions beyond simply choosing another location must include promoting the benefits to persuade voters, and working collaboratively with regional agencies, organizations, and interest groups.

No major project or public policy initiative can be successfully implemented without strong support from the public and stakeholder groups. It is imperative to receive public support and stakeholder buy-in. Achieving this requires clear communications focusing on the benefits, and mitigating concerns of the project. Creating a social media campaign is one of the quickest ways to relay information to voters, especially with the advancements in technology. This is particularly important to the tech-savvy millennial voters who stand to gain the most from an airport slated to open in 2040, when they are most likely to use it. It is also important to realize that opponents of the project will be likely to avail themselves of the same technology. So public debate surrounding a mid-twenty-first century airport is likely to take place in the blogosphere.

A way to find out what is important to voters is to talk with members of the communities. Supporters must present the project, engage community members in a discussion, and find out the major concerns. The most common concerns would most likely be centered on noise pollution, air quality, traffic, and general safety. Once the information is analyzed, planners and developers can work on ways to alleviate those concerns. This strategy would need to be implemented more than once to present the case after alterations and attempts to appease community members have been developed and included.

Several respondents indicated working with regional agencies to gain support of the project. While building support for joint-use policy seems like an ideal strategy, the majority of respondents indicated concern for civilian safety with active military operations. In addition, it is unlikely the FAA will grant approval if civilian safety is at risk; however, an alternative strategy is to build enough regional agency support to petition the BRAC Commission to relocate MCB Camp Pendleton.

If these strategies are unsuccessful, another option is to look at alternative locations or expand existing facilities. One respondent recommended looking offshore or expanding Lindbergh Field. One of the respondents that is currently serving the public from the primary interview data, had a very clear opinion on the topic in which he stated “Supporting an international airport at Camp Pendleton is political suicide.” One of the commanding officers for MCB Camp Pendleton, who is also opposed to the project, cited the expansion would need a significant amount of land, causing more encroachment on the training space. High ranking officials have strong opinions that are not easily swayed. In that case, alternative suggestions must be considered. Another respondent suggested to “build it offshore where there [are not] constant military exercises that could cause injury to

civilians.” Based on responses from the interviews conducted, the general consensus can be summarized by a quote from the one of the respondents “You have a better chance at getting Chargers than an airport at Camp Pendleton.”

Opportunities for Collaboration

Expanding the conversation beyond the borders of San Diego County offers new opportunities for cross-county collaboration. The 2013 EAS selected the Camp Pendleton site as the most viable option from among all those considered for the location of a new international airport within San Diego County. The 2014 study, building upon this recommendation, realized that San Diego County would not be the only County to benefit from locating an airport on this site. It also will benefit fast growing regions of neighboring Orange and Riverside Counties that. A key to making the new airport a reality is to establish positive collaborative efforts among the counties affected,

Fortunately, there is already a rich history of collaboration among San Diego, Orange and Riverside Counties. By leveraging these current relationships and partnerships, a collaborative model could be established to formulate a winning strategy to build this multi-county resource. The following selections highlight some of the existing cross-county efforts among Riverside, San Diego, and Orange Counties. Each of them exists to address some concerns that may be germane to the discussion of the building of the proposed airport. Each should be included in any cross county discussions concerning the project.

SANDAG

In 2001 the San Diego Association of Governments (SANDAG) recognized the importance of regional collaboration and created a Borders Committee to serve as a policy advisory entity. This interregional area includes Orange, Riverside, Imperial and San Diego Counties,. It also recognizes the importance of San Diego’s border with Mexico. The Borders Committee is responsible for advising SANDAG’s Board of Directors on interregional planning, encouraging communication and dialogue between the local areas. (SANDAG, 2014A) Additionally, the Southern California Association of Governments (SCAG) was added to the Board of the Borders Committee to facilitate a full dialogue between SANDAG and SCAG (SANDAG 2014B). It is important to note that SCAG is currently the largest Council of Governments in the United States (SCAG, 2014a).

Within the past year, this group has established an Overall Work Program with a proposed schedule to discuss the Orange County Transportation Authority (OCTA) and SCAG's collaboration and long term planning. Additionally, there has been an update on the Western Riverside Council of Government's (WRCOG) Interstate 15 Interregional Partnership (IRP). This committee provides an existing cross regional platform as a medium for partnership. Certainly, these groups should be consulted and their insights should be enlisted and integrated into any discussions of the Tri-County Airport project.

IRP (Inter-regional Partnership)

The IRP is a voluntary partnership between multiple public and private sector organizations spanning Riverside and San Diego Counties. Public organizations such as SANDAG and WRCOG are heavily involved. Created in 2001, the IRP aims to address the imbalance of jobs and housing growth between two-county region. The premise of this imbalance is attributed to a growing number of long distance commuters, which will have a serious impact on transportation, environment, and the general quality of life of residents. The long-term goal of the Interstate IRP is to reduce the number of work related vehicle trips and commuter miles through a committee-based framework that will facilitate sustainable land use. Increasing the availability of employment in areas closer to regions where people live while also increasing affordable housing in areas closer to job-rich areas will require fewer people to commute between the two regions (I15, 2014).

The proposed airport will help in both regards by creating jobs closer to the border between San Diego and Riverside. The airport would, by the nature of the massive operations in place during construction and the subsequent supporting operations, create an employment cluster at the center of the tri-county area which would, while perhaps not reducing the number of inter-county trips, would certainly shorten those commutes and reduce number of commuter miles travelers would engage in.

In 2005, the distribution of San Diego and Riverside employment in the entertainment and recreation industry was 68% and 32%, respectively. This imbalance of employment in the industry suggests that Riverside County is lacking employment opportunity in this his key industry. This disparity could be helped by the creation of a new business and industry cluster centered around a new international airport. A large job cluster would emerge as a result of airport operation related jobs and complementary industries, such as tourism and entertainment. An international airport further the IRP's existing entertainment and recreation industry goals by identifying opportunities to brand

the Tri-County region while developing complementary messages to reinforce the strengths of each respective region while developing an interregional transportation infrastructure that would provide travelers access throughout the region. This collaborative relationship would provide economic and employment opportunities (I15, 2014B).

San Diego Tri-County Funding Area Coordinating Committee

The San Diego Tri-County Funding Area Coordinating Committee, aptly named, is another already-existing partnership among Riverside, Orange and San Diego Counties. This group was formed to encourage integrated regional strategies from managing water resources to securing grant funding. A main focus of this committee is to proactively protect the counties from drought while protecting and improving water quality. This framework not only allows for necessary autonomy while providing interregional cooperation to improve water quality but also provides needed processes to address any issues or conflicts that may emerge amongst the three regions (OC Public Works 2009).

Other Potential Partnerships

Similar to the way that concept cars introduce new technology in potential future cars, a notion of concept collaboration can be used to introduce potential collaboration ideas that will be supported with a new international airport. A new airport could serve as a nucleus and anchor for new major business opportunities, as San Diego is a destination of choice for leisure and business travelers alike.

One potential business partner of the region is the NFL's San Diego Chargers Football club. For many years San Diego has been in discussions with the team, recognizing the economic importance of maintaining the team in the region but have been unable to secure funding of voter support for a new football stadium. A joint venture could be a rallying point for the tri-county area while keeping the team in San Diego and providing employment opportunities throughout the region.

Another staple of the San Diego area that could be a potential partner is the San Diego Convention Center. This facility currently has unmet demand as 39.7% of potential customers do not book the San Diego Convention Center because it does not meet their space requirements. This represents a \$1 billion loss in economic impact that the area could be realizing. According to a 2014 Cvent survey, a technology firm used by worldwide meeting planners, San Diego was ranked fifth on the top fifty meeting destinations in the country. With more convention center space and additional air travel offerings, San Diego

could benefit from increased bookings and could also attract larger conventions while keeping current large offerings such as ComicCon.

Finally, the tri-county region could greatly benefit from joint tourism efforts. San Diego is currently a major tourism destination and a full service international airport could pull from visitors from San Francisco and Los Angeles, tapping into the tourism market even further. This would create a unique opportunity for the area as a tri-county Tourism Board would market local tourism activities. San Diego could focus on the San Diego Zoo, Sea World, the craft beer industry, and professional sports. Likewise, Orange County could market Disneyland, Knott's Berry Farm, Medieval Times and professional hockey and baseball, while Riverside could focus on wine tasting, museums and state parks.

Conclusion

This study was intended to explore the political considerations spanning Southern California affecting the possibility of building an international airport at MCB Camp Pendleton. This location is easily accessible to the Tri-County area currently under-served by the existing airports that are also expected to reach capacity soon. Several previous studies indicate that this site would meet FAA standards while minimizing the residential population that would be impacted by either noise or pollution. This location provides a sufficiently large open space that can accommodate large international flights that cannot be accommodated elsewhere. Further, this large land mass represents less than five percent of the total land area controlled by MCB Camp Pendleton.

If an international airport were to be constructed at this location there would be many political hurdles that would need to be cleared first. The strongest one would be to find ways to mitigate the impact to the Marine training initiative. There is also the need to minimize potential environmental impacts including pollution and habitat destruction of the sixteen endangered plant and animal species on or adjacent to the site.

If there is a desire to further pursue the building of an airport at MCB Camp Pendleton, there are numerous tasks that will need to be completed. Many items that have been mentioned throughout this report would need to be addressed but the most pressing would be to have all of the needed studies done to determine the viability of success prior to signing any contracts to move forward. There would be the need for ecological studies, a roadway study, and, what could be the showstopper, an environmental feasibility study. It

would be a travesty to move forward without the support of the myriad numbers of public agencies that have been detailed in this report.

INTERNATIONAL EXPLORATORY AIRPORT STUDY 2.0

CONCLUSIONS

The 2013 Exploratory Airport Study concluded that Camp Pendleton would be the only feasible location for such a facility within San Diego County. That conclusion served as the starting point for the 2014 Exploratory Airport Study 2.0 presented in the preceding chapters. The analyses presented in this report address numerous ways in which the project will affect the region. They relate to serving the travel needs of residents of the Tri-County region; increasing air-travel capacity for Southern California; building an efficient and sustainable ground transport system; and creating jobs and building the economy. Each of these is discussed in the following paragraphs:

Serving the Travel Needs of the Tri-County Population

The Camp Pendleton site is located in the center of Tri-County, which spans North San Diego, Southern Orange, and Southwest Riverside Counties. Currently home to more than 2.2 million residents, the population of the Tri-County region will increase to 2.7 million people by the time a new airport is constructed. This diverse population shares many of the characteristics of the flying public. However, compared to national averages in terms of distance to an international airport, the population of the Tri-County region is underserved. From the perspective of Tri-County residents, a new airport is needed.

Increasing Air-Travel Capacity for Southern California

The new airport will benefit the entire Southern California region beyond Tri-County. Even with current expansion plans for air traffic infrastructure, both the Los Angeles and San Diego regions – and thus Southern California as a whole – will be unable to meet demand for air travel by 2040. It is estimated that the six airports currently serving the region will fall short of demand by as many as 30 million enplanements.

The new SCIA will enhance the operations of the recently expanded San Diego International Airport (SAN). Based on the benchmark study of other metropolitan areas served by multiple airports – as well as current topographical constraints – SAN will be unable to handle the level of international travel a city of its size requires. The newly renovated SAN can and should remain a vital part of the infrastructure serving domestic travel to the City of San Diego and the surrounding municipalities. The new airport should

focus primarily, but not solely, on international travel, providing easy access to underserved residents of the Tri-County region. Currently, those wishing to reach San Diego, Southwest Riverside, or Southern Orange Counties from outside the U.S. must first transit through other international airports. However, the proposed SCIA will provide easy access for business, tourist, and military passengers flying in from abroad.

Building an Efficient and Sustainable Ground Transport System

Oceanside lies at the crossroads of the Tri-County region. The proposed location for SCIA is close to downtown. Inter-county bus and train lines meet in Oceanside. East-west state routes that connect the two major north-south interstate highways pass through Oceanside. The analysis presented in this report shows that with plans underway, roadway improvements may be adequate to handle increased traffic on already crowded freeways to and from the airport. In contrast to roadways, current public transportation infrastructure is vastly under-utilized in the Tri-County region and throughout Southern California in general. A deliberative effort to link and create road and mass-transit infrastructure will be needed to serve the airport in ways that minimize traffic congestion as well as environmental impact. Increasing ridership should offset the increased demand from vehicular traffic on roads. Efforts must be made to increase ridership of mass transit among today's fuel conscious Millennial consumers so that they will consider taking public transit to the airport in the future.

Creating Jobs and Building the Economy

The new airport is expected to generate some 11,000 jobs during its construction. This is based upon benchmarking against other recent projects. Once it is built out, and depending upon actual, as opposed to estimated enplanements, the new airport is expected to employ some 30,000 workers onsite. Benchmarking against other recently completed international airports such as Denver, SCIA has the potential to create between 100,000 and 200,000 new jobs in related and supporting industries within the immediate vicinity. This report estimated that the multiplier effect of these new jobs on the local economy could reach between \$3 billion and \$6 billion. Additionally, the earnings of the people and businesses working at or near the airport will substantially contribute to the local, state, and federal tax bases.

It is easy to become enthusiastic about the great potential that this airport has for serving the air travel needs of the region and building its economy. However, making SCIA a reality will be challenging. Conversations and debate about building a new airport in San Diego County have been going on for decades. There are many governmental, military, civic, and business groups that have vested interests – and grave concerns – about where a new airport should be located and what it might mean to the region. The members of the 2014 MBA project team met with representatives of various stakeholder groups and have highlighted their concerns in this report. Without a concerted effort to work with these groups, the debate might rage on for many years into the future. The first steps toward realizing the goals of the Southern California International Airport located in the Tri-County region will involve addressing the concerns of key stakeholders and enlisting their support. Beyond overcoming these objections, the success of the Airport Project will depend upon building alliances and cooperative efforts among key stakeholders from within the Tri-County region, and beyond.

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Chapter 5

Baldassare, M. Public Policy Institute of California, Chief Executive Officer. Interviewed via telephone by Dylan Rander.

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