

The Economics of Land Use



Final Draft Report

Economic Impact of the Truckee-Tahoe Airport

Prepared for:

Truckee-Tahoe Airport District

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1. EXECUTIVE SUMMARY

The intent of this study is to provide the Truckee Tahoe Airport District with an objective analysis of the airport's economic impacts primarily to the geography defined as the Truckee Tahoe Airport District (TTAD), which generally aligns with the conventional definition of the North Lake Tahoe region (see **Figure 1**). Its methodology aligns with conventional economic impact analysis practices, utilizing industry-standard input-output (I/O) modeling frameworks to provide confidence and comparability of results, but also includes two components of substantial primary data collection to validate and quantify elements of both direct (i.e. operational) and some indirect (i.e. airport-related) business-to-business relationships. A critical component of the study is to estimate the impacts of the airport's functions and services on the Truckee Tahoe Airport District's.

Measurements of Economic Activity

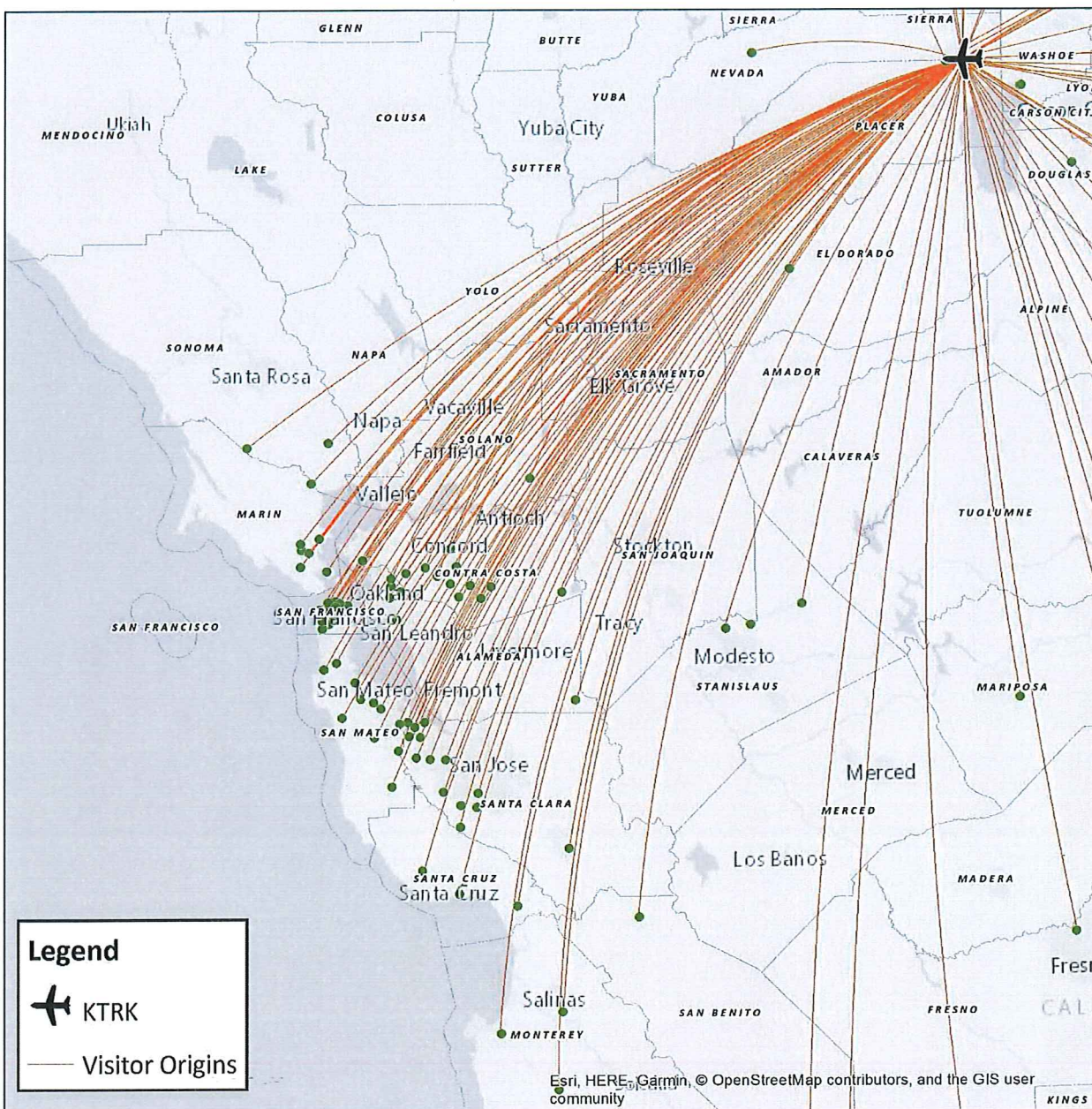
Three main measures of economic activity were identified through the collection and analysis of data. These components relate to the direct operations of the airport and the services it provides to the direct product of those services and the indirect product of those services and the business-to-business relationships that develop in a regional agglomeration of industries.

- **Visitation** – economic activity related to visitation that results from the airport's operations, including the direct employment, earnings, spending, and output that are supported directly by airport user spending. In the most recent year, there were an estimated 16,300 aircraft enplanements at the Truckee Tahoe Airport carrying an estimated 38,300 passengers. In a Visitor Survey, it was found that airport users originated from 18 different states, 87 percent of which arrived from California (predominately the Bay Area), and 13 percent of which arrived from origins outside of the state, including international origins.
- **Airport Operations** – economic activity related to the airport's operations, including the direct employment, earnings, spending, and output that are essential to moving aircraft in and out of the Airport District and for administering, managing, maintaining, and operating the airport itself. The airport employs 29 full- and part-time workers and has an annual operating budget of \$11.2 million.
- **Businesses in Proximity to Airport** – economic activity of airport- and nonairport-related businesses and vendors on or around airport property. This includes the direct employment, wages, spending, and output that accounts for the numerous business-to-business activities (i.e. indirect economic activity) that support the operations of the airport. On and around the airport, there are approximately 45 businesses, which estimate that the airport's operations account for approximately 22 percent of their business revenues.

Figure 1
Truckee Tahoe Airport District



Figure 2
Visitor Origins (Bay Area)



District Context

A core distinction made throughout this study is the portion of economic activity that is airport-related and within the TTAD, as well as the portion of economic activity that is dependent on the airport's continued operation. **Figure 3** illustrates the magnitude of annual airport user's spending and economic activity in the context of total annual economic activity in the TTAD. Metrics identified include total wage and salary employment¹, total GRP, spending categories such as accommodations, retail (including food and beverage and general retail), and property valuation.

- **Employment** –The District is estimated to have approximately 17,500 jobs, of which an estimated 1.5 to 3.5 percent of which were supported by the airport's operations and its users.
- **Gross Regional Product (GRP)** – The total GRP, or value-added, in the TTAD was \$2.1 billion in 2017.
- **Retail Spending** – For all categories, including food and beverage, restaurants, and general retail, retail spending in the TTAD totaled approximately \$306 million. An estimated 5 percent is estimated to derive from spending related to airport users.
- **Accommodations** –The District had approximately \$245 million in nightly accommodations spending in 2017, of which an estimated 3 percent was related directly to airport users.
- **Property Valuation** –The District contained \$19.5 billion in total taxable property valuation in 2017. It is estimated that approximately \$1.6 billion in is attributable to second homeownership of airport users (9 percent of the TTAD's residential property valuation).

Economic Impact

The Truckee Tahoe Airport generates far-reaching impacts throughout the TTAD with its modest 41,300 revenue passengers from around the country. Its impacts are characterized below in terms of direct, indirect, and induced activities.² As shown in **Figure 3**, total impacts are defined as the operations of the airport itself and spending from revenue passengers. In 2017, this totaled more than \$73 million but does not include the \$1.5 billion in taxable residential property valuation attributable to second homeownership of those revenue passengers.

Direct Impacts

The direct impacts are defined as the direct spending of revenue passengers, the taxable residential property valuation attributable to second homeownership of passengers, and the direct operations of the airport.

- **Visitation** – In 2017, revenue passengers utilizing the airport brought approximately \$30 million of direct spending to the local economy. The average passenger stayed approximately 4.9 days, of which 19 percent of them spent \$379 on nightly accommodation, \$52 per day on food and beverage, \$31 per day on shopping and retail, and \$43 per day on

¹ Wage and salary jobs are not inclusive of sole proprietorships. This measure includes all jobs for reported by the Bureau of Labor Statistics and state departments of labor.

² Refer to page 41 for a detailed description of direct, indirect, and induced impacts.

entertainment and recreation.³ Altogether, visitors spent \$6.6 million on accommodations (2.9 percent of District activity^{4,5}); \$6.2 million on retail (3.4 percent of District activity⁶); \$8.0 million on entertainment and recreational activities⁷; and \$9.7 million on food and beverage (6.7 percent of District activity⁸).

- **Property Valuation** – Four (4) out of five (5) revenue passengers own vacation homes in the TTAD. As a result, approximately \$1.4 billion (8 percent) of the TTAD’s taxable residential property valuation results from these airport users’ vacation home investments, which generates approximately \$14 million in annual property tax revenues for the school districts, Nevada and Placer Counties, and their municipalities.⁹
- **Airport Operations** –Visitation to the North Lake Tahoe area through the airport supports demand for the 29 jobs at the airport and its \$11.2 million in operational spending. It is against the spending of the airport that the multiplier effects are calculated below in **Figure 4**.

**Figure 3
Annual District Economic Context**

**Truckee Tahoe Airport
District Economic Context
(2017) ^[1]**

	TTAD	Airport User Related	as % of TTAD
District Economic Activity			
Employment (jobs)	17,485	644	3.7%
Total Gross Regional Product (GRP)	\$ 2,120,915,454	\$ 73,093,649	3.4%
Spending Activity			
Retail Spending (including F&B)	\$ 306,343,867	\$ 14,553,270	4.8%
Accommodations Spending	\$ 244,757,317	\$ 7,056,766	2.9%
Taxable Property Valuation			
Residential	\$ 18,245,086,569	\$ 1,581,003,836	8.7%
Commercial	\$ 348,706,933	n/a	n/a
Other	\$ 932,187,587	n/a	n/a
Total Taxable Property Valuation	\$ 19,525,981,089	\$ 1,581,003,836	8.1%

[Note 1]: Employment is a 2017 estimate based on state and federal data sources; retail spending is based on 2016-17 data; accommodations spending is 2017; property valuation is 2017.
Source: Truckee Tahoe Airport District; Economic & Planning Systems
C:\Users\idschwartz\EPDS\EN\Desktop\163053\163053-TTAD Economic Context.xlsx\TABLE 1 - 2018

³ Refer to page 27 for a detailed description of these spending factors.

⁴ Refer to **Figure 27** on page 27 for details.

⁵ It should be noted that the estimation of lodging industry impacts attributable to revenue passengers may be partially duplicative of economic impacts that the lodging industry itself may estimate. For example, as **Figure 27** shows, 19 percent of total visitors attributable to the airport’s revenue passengers utilize nightly accommodations. It can be assumed that an economic impact analysis of the lodging industry to the North Lake Tahoe region would count these nights in its total economic impacts as well as nights attributable to other visitors utilizing ground transport or even commercial air travel.

⁶ Refer to **Figure 28** on page 27 for details.

⁷ Refer to **Figure 29** on page 28 for details.

⁸ Refer to **Figure 30** on page 28 for details.

⁹ While the estimated taxable property valuation and resulting local property tax revenues can be attributed to the 2nd home ownership of revenue passengers to the airport, local property taxes would be paid regardless. As such, property tax revenues are not included in Error! Reference source not found.

Indirect Impacts

The indirect impacts of the airport are defined as the business-to-business spending associated with direct spending activity. These impacts are calculated and related to visitation spending and the direct operations of the airport, an example of which is characterized by the collection of data from businesses surrounding the airport property.

- **Visitation** – The \$32.3 million of annual direct spending from revenue passenger visitation results in the generation of demand for an additional \$10.7 million in spending throughout the TTAD, which supports an additional 64 jobs in the TTAD and an additional \$5.9 million to the TTAD's GRP.
- **Airport Operations** – The \$11.2 million operational budget generates approximately \$4.7 million of indirect or business-to-business spending in the District, supporting an additional 32 jobs locally.

Primary data was collected to quantify a portion of the indirect impacts of the airport. These businesses, located surrounding or on the airport property, account for more than 2 percent of the District's total jobs, and it is estimated that without the airport's operations, approximately 5.5 percent of these jobs would be lost or relocated.¹⁰ Approximately one-third of these businesses is directly dependent on the airport's operations. That is, without the airport's operations, total spending in the TTAD would drop by approximately \$2.5 million.

Induced Impacts

The induced impacts of the airport are defined as the spending of households related to direct jobs and those of in industries that represent business-to-business relationships.

- **Visitation** – As a result of the \$42.9 million in direct and indirect spending that results from visitation, an additional layer of \$17 million is created in the District, supporting an additional 80 jobs.
- **Airport Operations** – An estimated 25 additional jobs and \$3.4 million in economic activity is induced by household spending attributable to the direct and indirect economic activity related to the airport's operations.

¹⁰ Refer to **Figure 39** on page 35 for details.

Multiplier Effects

It should be noted that in traditional economic impact analysis input-output modeling, one of the major underlying assumptions is that the direct spending dollars are “new” to the region. In this study, the collection of data from revenue passengers demonstrates the origin of this direct spending as entirely from outside the District economy. As such, it can be stated more confidently that the outputs of this analysis also would characterize the loss of economic activity to the District if the airport did not operate.

The direct multiplier effect of the airport is characterized as the ratio of dollars spent in the District economy to the direct dollars spent by the airport itself to operate. That is, without airport expenditures on operations, the net-new dollars spent by revenue passengers would not occur. As shown below, every one (1) dollar spent operating the airport yields an additional \$5.50 spent in the District economy (i.e. above the direct spending of the airport). It should be noted that this number does not include the estimated impact of taxable residential property valuation. It should also be noted the estimation of impacts related to dependent businesses in proximity to the airport are included in the estimates of indirect impacts.

**Figure 4
Spending Multiplier Effect**

Total Spending Multiplier Effects Attributable to the Airport

	Direct	Indirect	Induced	Total
Direct Multiplier Effect				
Airport Operations				
Employment	29	32	25	86
Labor Income	\$3,357,534	\$1,412,781	\$1,149,086	\$5,919,401
Value-Added (GRP)	\$4,201,846	\$2,521,624	\$2,105,042	\$8,828,513
Output (Final Demand)	\$11,251,567	\$4,659,563	\$3,396,143	\$19,307,273
Airport Visitor Spending				
Employment	410	69	80	558
Labor Income	\$12,259,376	\$3,139,111	\$3,663,278	\$19,061,765
Value-Added (GRP)	\$19,742,933	\$6,309,478	\$6,711,345	\$32,763,756
Output (Final Demand)	\$32,269,550	\$10,689,192	\$10,827,633	\$53,786,376
Total Spending Attributable to Airport				
Employment	439	100	105	644
Labor Income	\$15,616,910	\$4,551,893	\$4,812,363	\$24,981,166
Value-Added (GRP)	\$23,944,779	\$8,831,103	\$8,816,387	\$41,592,269
Output (Final Demand)	\$43,521,118	\$15,348,755	\$14,223,776	\$73,093,649
Multiplier Effect [1]	\$2.87 to 1	\$1.36 to 1	\$1.26 to 1	\$5.50 to 1

Source: Economic & Planning Systems

[Note 1]: Multiplier effect is calculated as the ratio of direct, indirect, and induced spending to direct airport operational spending.

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Demand Elasticity

Demand elasticity in this context refers to the portion of demand for regional goods and services that would continue to exist *but for* the airport – that is, it is an estimation of the portion of regional economic activity that would occur without the airport. The approximation is based on a quantitative analysis of visitor survey responses and survey responses from businesses in proximity to the airport. It characterizes the portion of all visitation-oriented land uses, such as ski resort activity, tourism, shopping, dining, and business-to-business spending that would not occur without the airport.

- **Reduction in Visitors:** more than one-third of all airport survey respondents indicated that they would be “very unlikely” to return to the North Lake Tahoe region without the airport.
- **Visitors Do Not Return:** more than three-quarters of all airport survey respondents indicated that they would be very unlikely to use the South Lake Tahoe Airport to visit the North Lake Tahoe region, nearly half of respondents indicated that they would be very unlikely to utilize commercial or charter service into Reno or Sacramento and drive the remainder of the distance to the North Lake Tahoe region, and more than one-third indicated they would be very unlikely to return to the North Lake Tahoe area if the airport did not operate.
- **Limited Roadway Network Capacity:** currently, Interstate I-80 is functioning at nearly 90 percent capacity, which equates to a level of service “D” on a scale of A to F, where F is roadway failure. Even with the Department of Transportation’s capital improvement plans (i.e. capacity enhancement/expansion), it is estimated that Interstate I-80 will reach 96 percent of its design capacity by 2035, subsequently downgrading to a level of service F.

Figure 5
Transportation Metrics

Transportation Metrics

	Levels	
	# Vehicles / km / lane	Volume Over Capacity
Level of Service		
A	Less than 7	35%
B	7 to 11	55%
C	11 to 16	77%
D	16 to 22	92%
E	22 to 28	100%
F	More than 28	> 100%

Source: Economic & Planning Systems

H:\163053- Truckee Tahoe CA Airport Economic Impact
Study\Data\163053- Transportation metrics.xlsx\Sheet2

- **Future Land Use Development:** Truckee Tahoe Airport is integrated into the region’s growth and development to a greater extent than may be recognized. The user survey results demonstrate that approximately 81 percent of respondents own 2nd homes in the TTAD, indicating that some of the demand driving the current predominance of residential construction activity may be attributed to airport users. Similarly, some of the construction-related business and employment in the region related to second home and resort-oriented land use development may be attributed to airport activity.

- o Considering only major projects in the development pipeline (i.e., excluding small-scale development such as single-family home construction on a single parcel), 2,600 residential housing units will be delivered within the District, in a variety of product types offered at a wide range of price points. Approximately 15 percent (400 units) of these residences are identified as affordable or workforce housing and almost certainly all meant for the local residential market. The vast majority of the units (85 percent) will be “market-rate,” but those too will be targeted towards various market segments, with the approximately 700 planned multifamily units likely targeted towards the local residential market. However, plans throughout the District also call for the following market-rate units: over 600 single-family homes, 165 full ownership condominiums, and 151 cabins.
- o In addition to residential units, major projects in the pipeline will deliver a substantial number of new tourist accommodation units (TAUs) as well as a considerable amount of other nonresidential uses. Over 1,300 TAUs are in the pipeline, comprised of over 867 condominium-hotel units, 319 conventional hotel rooms, and 140 fractional/time-share units. Major additions to the region’s commercial uses include over 250,000 square feet of office space, over 900,000 square feet of retail space, and approximately 200,000 square feet of industrial space. The addition of these commercial uses has the potential to create economic stability within the region, providing local jobs and amenities that may reduce the need to commute.

Given the limited analysis that was possible of the existing and future roadway network and future land use development, the findings as described above are significant in that further research should be conducted into quantifying the relationships between the airport and land use development projects and into understanding how the airport can play a role in regional land use development patterns.

Overall, as illustrated in **Figure 6**, total spending from visitors, businesses in proximity to the airport that are dependent on its operation, and the operations of the airport amount to \$73.1 million per year, or 3.4 percent of the District’s total economic activity.

Figure 6
Estimate of District Economic Activity Loss

Estimate of Loss in Economic Activity if No Airport

Source: Economic & Planning Systems

C:\Users\dschwartz.EPSDEN\Desktop\163053\163053-Loss of Airport Operations Impact-081418.xlsx\TABLE 4 - High Loss Estimate

	Economic Activity			
	District	Loss	Net	Loss as %
Economic Activity				
Employment	17,486	644	16,842	3.7%
Labor Income	\$758,119,667	\$24,981,166	\$733,138,501	3.3%
Value-Added (GRP)	\$1,244,101,828	\$41,592,269	\$1,202,509,559	3.3%
Output (Final Demand)	\$2,120,915,454	\$73,093,649	\$2,047,821,805	3.4%

2. TECHNICAL DOCUMENTATION

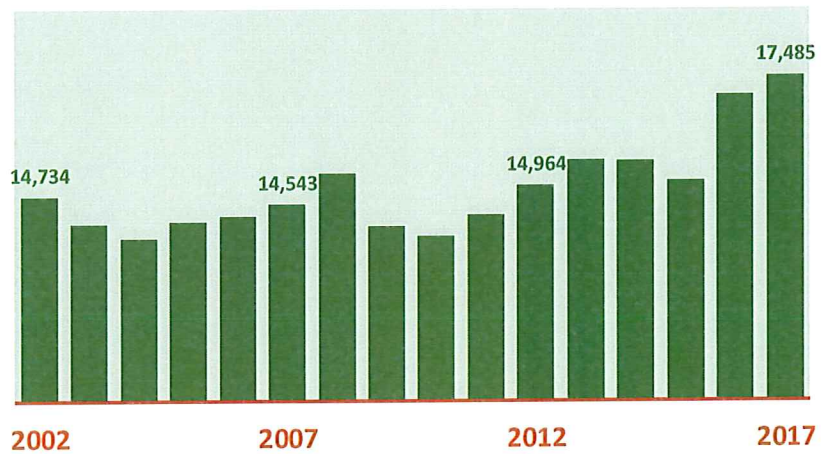
District Context

Employment

Using data from the Bureau of Labor Statistics (BLS) and the U.S. Census Longitudinal Employer-Household Dynamics data series, it is estimated that the current level (i.e. 2017) of wage and salary employment (not including self-employed proprietors) in the Truckee Tahoe Airport District (TTAD) is nearly 17,500. Data show that employment in the TTAD has grown at approximately 1.1 percent per year since 2002, equating to approximately 180 jobs per year. EPS utilized data at different geographic levels, including BLS data representative of both Nevada and Placer Counties, but calibrated the analysis specifically to the boundaries of the TTAD.

Figure 7
District Wage & Salary Employment

In-District Employment



Source: Bureau of Labor Statistics; U.S. Census Longitudinal Employer-Household Dynamics; Economic & Planning Systems

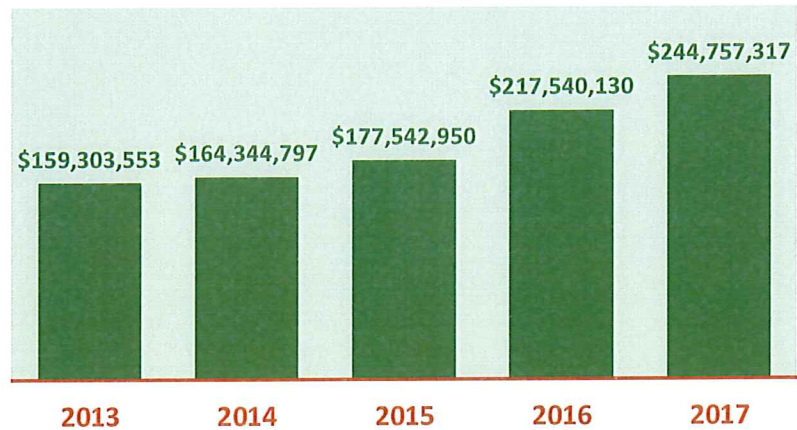
H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Data\163053-BLS-Counties.xlsx\TABLE 1 - Summary

Accommodations Spending

The analysis of transient occupancy taxes (TOT) for the Town of Truckee and the relevant portions of Placer County within the TTAD show a current (2017) level of accommodations spending of nearly \$245 million. It is against this context that the analysis of visitor expenditure is made later in the report.

Figure 8
District Lodging Spending

In-District Lodging Spending



Source: Source: Placer County; Town of Truckee; Nevada County Treasurer-Tax Collector; Reno Sparks Convention and Visitors Authority; Economic & Planning Systems Economic & Planning Systems

H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Data\163053-TOT and Sales Tax-062518.xlsx\T2b - Lodging Spending Summary

Retail Spending

The analysis of retail expenditures utilized data from the California Department of Tax and Fee Administration. Detailed data on retail spending in the District by retail category was used to identify the proper current (2016/2017) levels. Data collected from CDTFA included the following categories of spending:

- Furniture & Home Furnishings
- Electronics & Appliance Stores
- Building Materials and Garden Supplies
- Food and Beverage Stores
- Health & Personal Care Stores
- Gasoline Stations
- Clothing and Clothing Accessories Stores
- Sporting Goods, Hobby, etc.
- General Merchandise Stores
- Miscellaneous Retail
- Food Services and Drinking Places

CDTFA tracks detailed sales tax data at two jurisdictional levels, reporting sales tax figures for individual incorporated areas as well as an aggregate figure for each County’s unincorporated areas. This system allowed for the easy identification of retail sales figures for the Town of Truckee. But identifying correct spending levels for the unincorporated portions of Placer County, which account for a large portion of the TTAD, proved challenging since CDTFA does not disaggregate data of unincorporated areas by more specific and distinct geographies. Because CDTFA does not collect sufficiently detailed records of retail sales for the State of California and because they do not have the ability to query their data to the extent that would have been preferable for this analysis, EPS utilized County Assessor geocoded parcel data to apportion total floor area by different land uses to construct the most reasonable estimate of retail spending for the unincorporated Placer County portion. Based on that analysis, it was determined that District spending on standard retail categories accounted for nearly 4 percent of all Placer County and spending on food services and drinking places accounted for nearly 20 percent. In total, it was estimated that District retail spending of \$306 million for the current (2017) year accounts for slightly less than 8 percent of Placer County plus the appropriate portion of Nevada County.

Figure 9
District Retail Spending

In-District Retail Spending

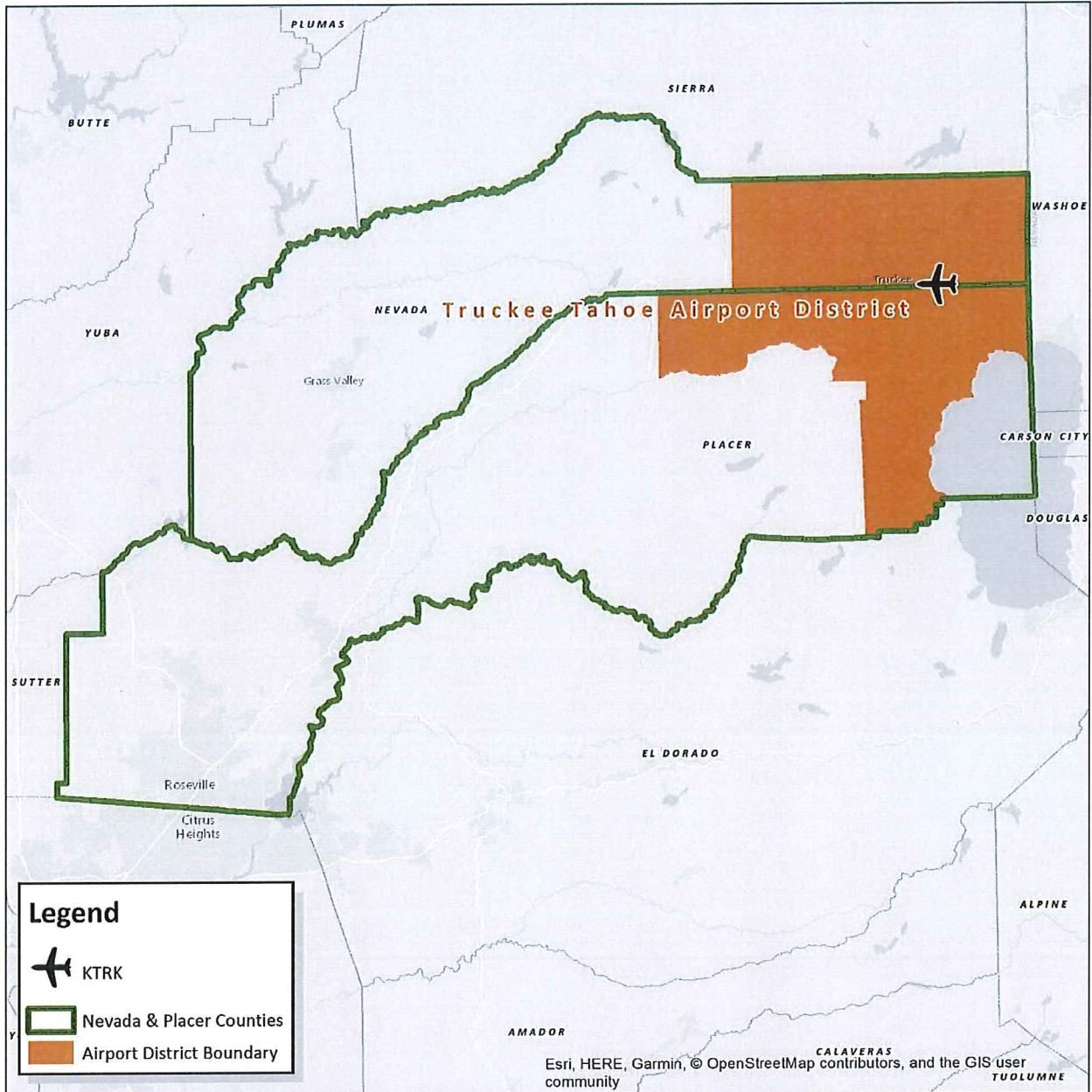


Source: State of California CDTFA;
Economic & Planning Systems
H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Data\163053-
TOT and Sales Tax-062518.xlsx\T3a - District Sales Summary

Property Valuation

A geospatial analysis of the all parcels in Nevada and Placer Counties utilized Assessor records for all parcels, as shown in **Figure 10**.

Figure 10
District Property Valuation



Of the total \$86.3 billion in total taxable property valuation for Nevada and Placer Counties, the TTAD accounts for 23 percent or \$19.5 billion. Taxable residential property in the District is estimated at \$18.2 billion, accounting for 93 percent of the District's total valuation, a higher proportion than the 84 percent that residential valuation contributes to the total valuation of the two counties as a whole.

Figure 11
District Property Valuation

Distribution of Taxable Property Valuation In & Out of the Truckee Tahoe Airport District

	Taxable Valuation		Total
	In District	Out of District	
<u>Land Uses</u>			
Commercial	\$348,706,933	\$3,977,738,685	\$4,326,445,618
Industrial	\$77,575,464	\$1,992,557,999	\$2,070,133,463
Lodging	\$171,985,198	\$281,837,385	\$453,822,583
Office	\$161,367,027	\$2,134,874,712	\$2,296,241,739
Residential	\$18,245,086,569	\$56,106,456,549	\$74,351,543,118
Restaurant	\$60,093,189	\$320,985,218	\$381,078,407
<u>Other</u>	<u>\$461,166,709</u>	<u>\$1,964,311,448</u>	<u>\$2,425,478,157</u>
Total	\$19,525,981,089	\$66,778,761,996	\$86,304,743,085
	23%	77%	100%

Source: Placer and Nevada Counties; Economic & Planning Systems

H:\163053- Truckee Tahoe CA Airport Economic Impact Study\Data\163053-Combined Property Valuation Data.xlsx\TABLE 3.1- Summary

Aircraft Operations

In 2017, the airport recorded 33,580 aircraft operations¹¹, including the aircraft type shown in **Figure 12**. Excluding helicopter and glider operations, it is estimated that there were 13,603 piston and jet aircraft landings. Using aircraft capacities and average load factors by aircraft type, it is estimated that 41,359 revenue passengers used the airport in 2017.

Figure 12
Aircraft Operations and Estimated Passengers

Aircraft Operations and Estimated Revenue Passengers

Aircraft Type	Aircraft Operations		Passenger Load Factors			Revenue Passengers
	Operations	Landings at 50%	Low	High	Avg.	
Piston	14,978	7,489	1	2	1.5	11,234
Piston Twin	1,145	573	2	3	3.0	1,718
Turboprop	6,942	3,471	3	8	4.5	15,620
Jet 2 (< 12.5k)	960	480	3	8	4.5	2,160
Jet 3 (12.5 - 20k)	1,599	800	4	6	5.0	3,998
Jet 4 (20 - 50k)	1,274	637	6	14	8.0	5,096
Jet 5 (50k+)	307	154	10	15	10.0	1,535
Helo (firefighting and AMT)	1,229	n/a	n/a	n/a	n/a	0
Gliders (including tow plane)	5,146	n/a	n/a	n/a	n/a	0
Total	33,580	13,603				41,359

Source: Truckee-Tahoe Airport District; Economic & Planning Systems

C:\Users\dschwartz.EPSDEN\Desktop\163053\163053-KTRK OPS_DATA2000_2016.xlsx\TABLE 1- Total Passengers

¹¹ An aircraft "operation" refers to a take-off or landing.

To support those operations, the airport has a total operating budget of approximately \$11.2 million, including approximately \$4.1 million in payroll, benefits, and the cost of goods, as well as approximately \$7.1 million in operations and maintenance.

**Figure 13
Airport Budget**

**Truckee Tahoe Airport
District Proposed Budget
for
12 Months Ending
December 31, 2018**

	Amount
Operating Revenues	\$ 4,812,850
Cost of Goods Sold	\$ 1,186,158
<u>Payroll and Employee Benefits</u>	<u>2,937,910</u>
Total Payroll, Benefits and Cost of Goods	\$ 4,124,068
Gross Profit (Loss)	\$ 688,782
Expenses	
Operating, General & Administrative Expenses	\$ 5,195,500
<u>Repairs and Maintenance</u>	<u>1,932,000</u>
Total Operating and Maintenance	\$ 7,127,500
Net Operating Income (Loss)	\$ (6,438,718)
<u>Other Income and (Expense)</u>	<u>6,795,285</u>
Net Income (Loss)	\$ 356,567

Source: Truckee Tahoe Airport District; Economic & Planning Systems

H:\183053- Truckee Tahoe CA Airport Economic Impact Study\1Data\183053-Airport operating budget.xlsx\TABLE 1- 2018

Visitor Survey

Surveys are a well-documented technique for drawing conclusions on unique questions for which no secondary data source can provide reliable answers, when appropriately designed. In resort economies, they are a common analytical/data collection tool. That is, no secondary data source on visitor spending exists that would be both available at this level of geographic specificity or for which detailed spending categories, such as lodging, retail, etc., exist. This data set also complements the off-the-shelf nature of standard economic impact analysis findings, which do not capture the nuance of local dynamics.

Methodology & Response

EPS utilized an electronic survey instrument fielded to revenue passengers via a weblink distributed through emails from respective charter services and carriers. EPS was also grateful for the commitment of time and resources of TTAD staff for completing an intercept version of the same survey during the high travel season of Labor Day weekend 2017.

The intercept version of the Visitor Survey was fielded initially during July 2017 through Labor Day weekend 2017, while the weblink version of the survey was fielded and distributed simultaneously. Because the survey was designed to collect data from travelers on their most recent or upcoming trip, spending and visitation data are representative of all 12 months, but predominately July, August and September.¹² Separate URLs were also created so as to distinguish results between the two versions. In total, 437 responses were obtained with 238 through the weblink and 200 through the intercept version.

While all 437 responses were used for identifying visitor origins or trip purpose, a subset was created for the purpose of identifying economic impacts of Truckee Tahoe Airport users, filtering out respondents who indicated they drove or those who indicated they utilized airports in Reno or Sacramento.¹³

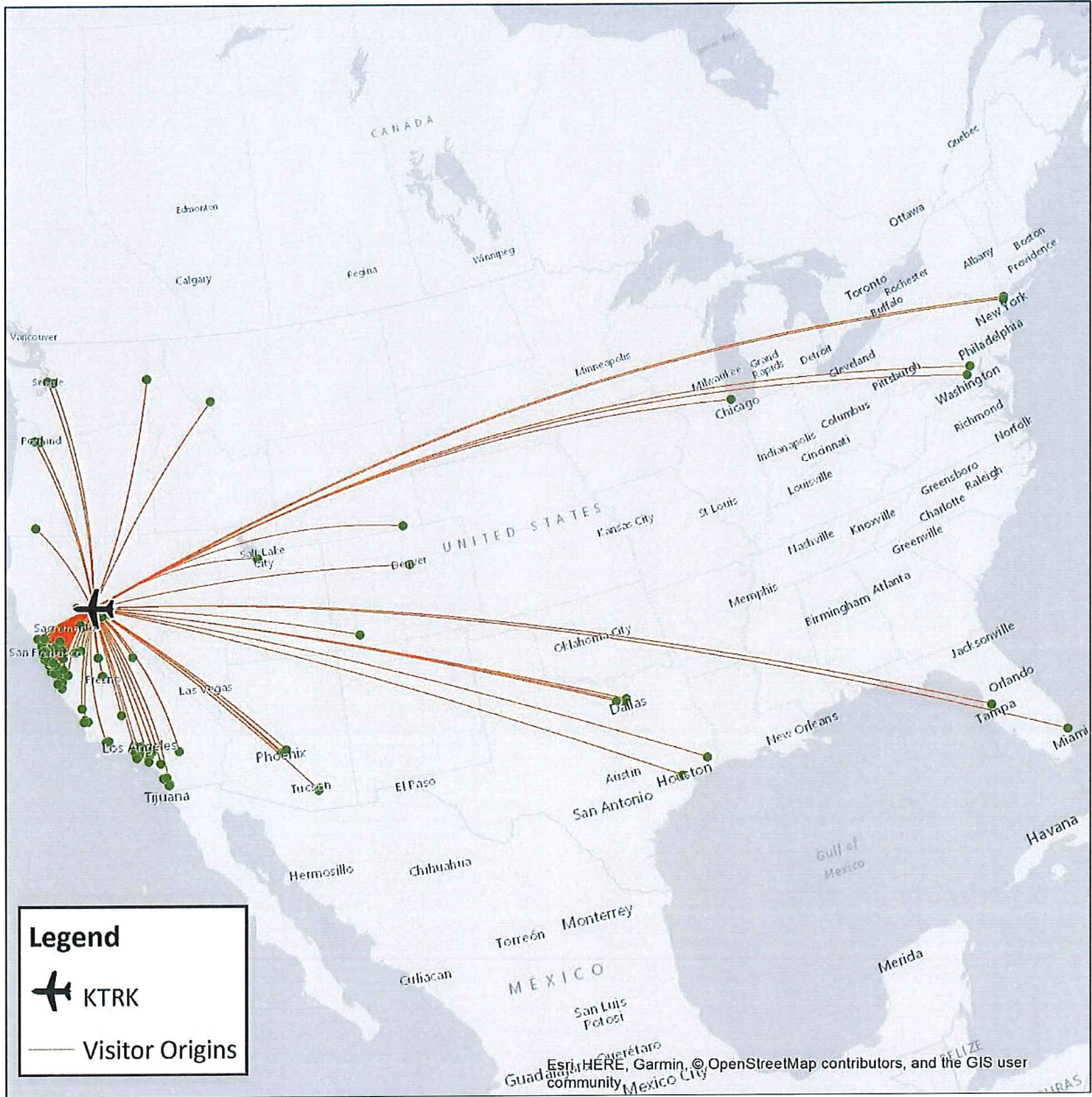
¹² Approximately 87 percent of survey respondents visited the North Lake Tahoe area during the months of July, August and September. Slightly less than 10 percent of the responses were reflective of visits during June and October and approximately 6 percent of responses reflected visits during the other months.

¹³ It should be noted that responses to the survey included several individuals it is assumed accessed the weblink via friends or acquaintances that had taken the survey. EPS accounted for these responses and ensured that the results were not skewed by non-airport users.

Visitor Origins

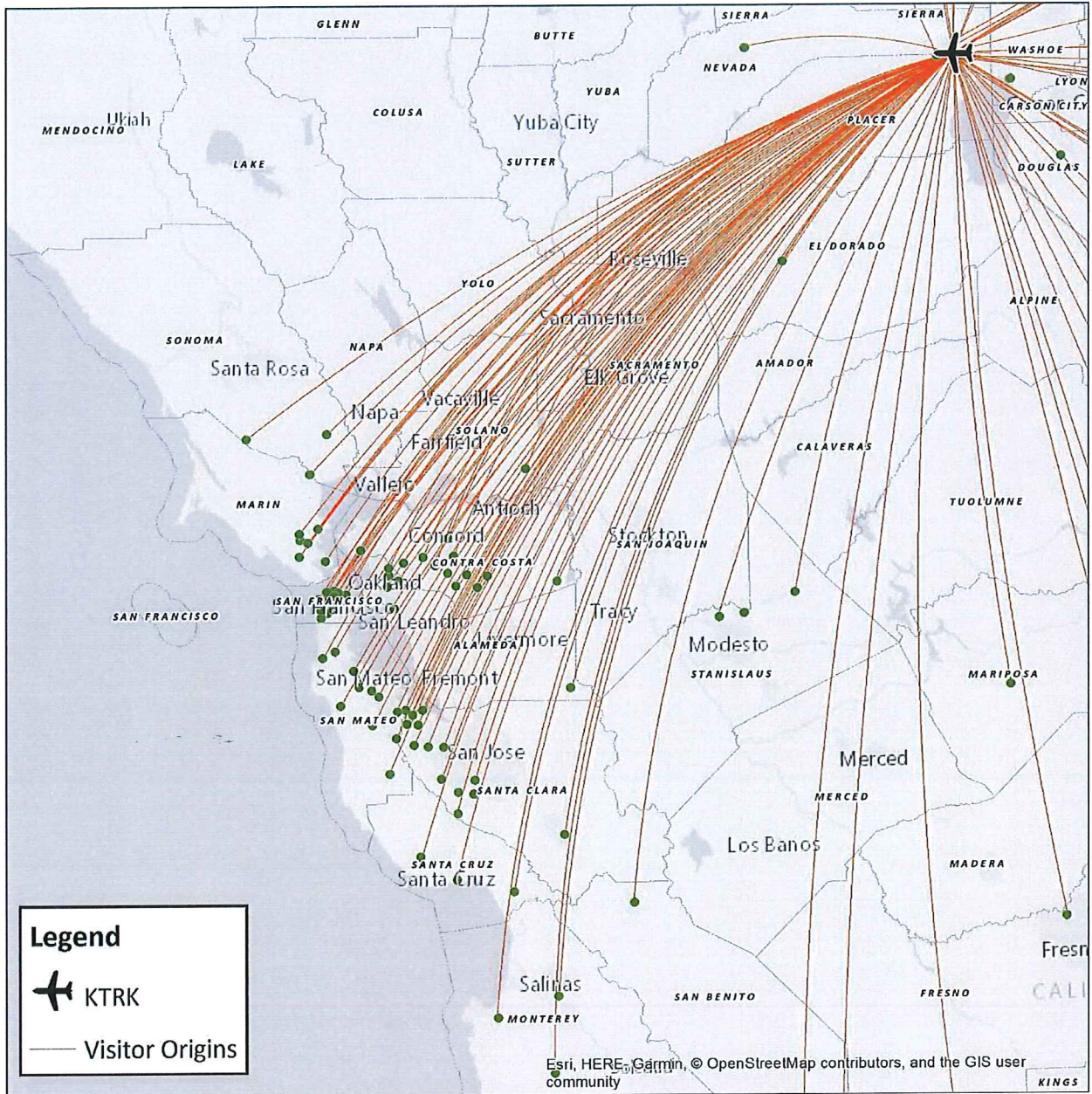
Figure 14 illustrates the diversity of visitor origins. Not illustrated were a handful of respondents that originated from overseas, including Canada, Mexico, Finland, and Germany.

Figure 14
Visitor Origins



While a majority of visitors originate from California, the largest portion of visitors originate from the San Francisco Bay Area, as illustrated in **Figure 15**.

Figure 15
Bay Area Visitor Origins

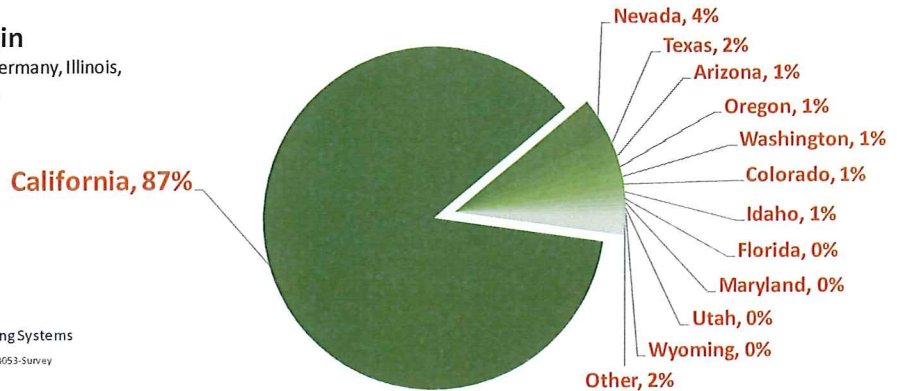


Complementing the travel patterns illustrated above, **Figure 16** documents that 87 percent of all visitors originate from California, while Nevada and Texas account for another 6 percent, and visitors from Arizona, Oregon, Washington, Colorado and Idaho collectively account for an additional 5 percent.

Figure 16
Visitor Origins

Distribution of Visitor Origin

"Other" includes: Connecticut, Finland, Germany, Illinois, Mexico, Montana, New York, Tennessee.



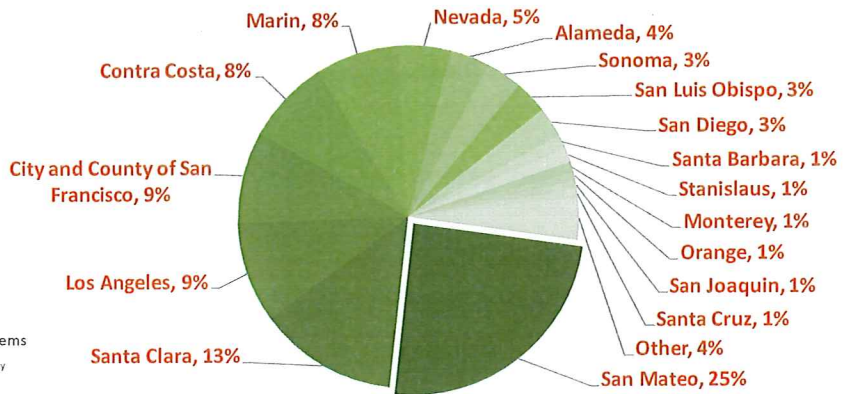
Source: 2017 Visitor Survey; Economic & Planning Systems
H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Data\163053-Survey Data-062118.xlsx\T1 - Destinations

Among the visitors from California, 25 percent come from San Mateo County, followed by Santa Clara (13 percent), Los Angeles and San Francisco (both at 9 percent), and Contra Costa and Marin County (both at 8 percent).

Figure 17
California Visitor Origin

Distribution of California Visitor Origin

"Other" includes: El Dorado, Kern, Riverside, San Bernardino, Solano, Fresno, Inyo, Mariposa, Sacramento, San Benito.



Source: 2017 Visitor Survey; Economic & Planning Systems
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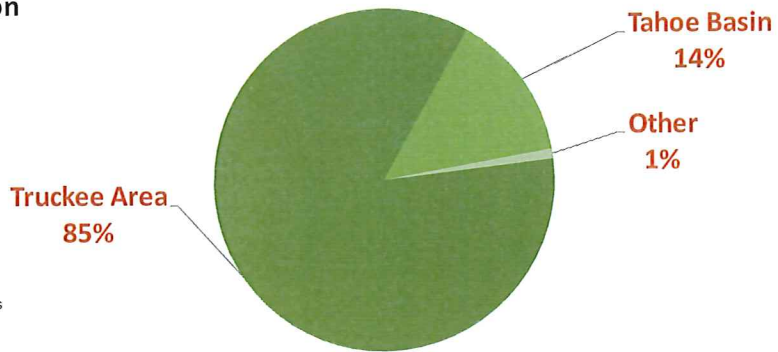
Visitor Destination

It should be noted that 99 percent of all revenue passengers responding to the survey indicated that their final destination was some location in the North Lake Tahoe region¹⁴, excluding destinations across the state line. Passengers identified their destinations as Truckee, Tahoe Donner, Glenshire, Martis Camp, Northstar, Kings Beach, Carnelian Bay, Tahoe City, Tahoma, and Homewood as a part of this collective definition of the North Lake Tahoe area (within the District). As shown below in **Figure 18**, these destinations are broken down into two for illustrative purposes. The destination for 85 percent of airport users was the Truckee Area, defined as the Town of Truckee, Tahoe Donner, Glenshire, Martis Camp, and Northstar. Slightly less than the remainder of airport users indicated their destination was the Tahoe Basin, defined as Kings Beach, Carnelian Bay, Tahoe City, Tahoma or Homewood. A small handful of visitors indicated their destination was actually Reno, South Lake Tahoe, Nevada City or Minden.¹⁵

Figure 18
Destination

Distribution of Visitor Destination

"Other" includes: Reno, South Lake Tahoe, Nevada City, and Minden.



Source: 2017 Visitor Survey; Economic & Planning Systems
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¹⁴ Out-of-area visitors frequently consider Truckee, Northstar, and West Shore collectively as Lake Tahoe or North Lake Tahoe.

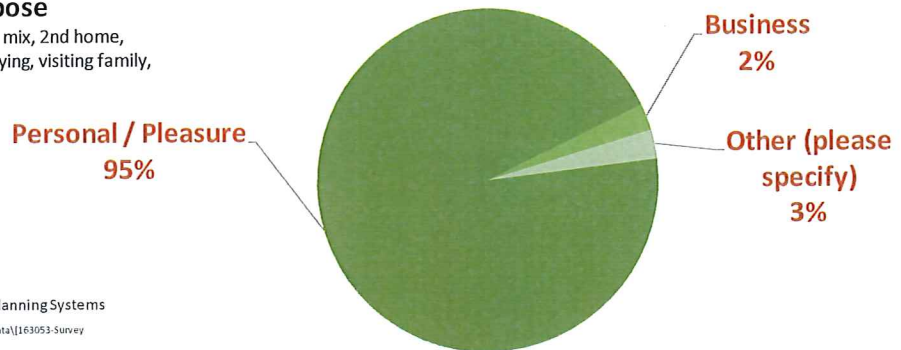
¹⁵ In the analysis of economic impacts, the spending and economic impacts from revenue passengers whose final destination is one of these "other" locations is excluded, i.e. the economic impact analysis only counts spending and activity metrics of revenue passengers to the North Lake Tahoe region.

Nearly all of the airport users indicated that their primary trip purpose was personal or pleasure, while just 2 percent indicated their purpose was business. And while the remaining 3 percent indicated that they had an “other” purpose to their trip, their descriptions generally indicated some combination of the two: business/pleasure mix, vacation home visit, business, the airshow, races, mountain activities, visiting family, or medical reasons.

Figure 19
Trip Purpose

Distribution of Trip Purpose

"Other" includes: business / pleasure mix, 2nd home, business, airshow, races, mountain flying, visiting family, medical.



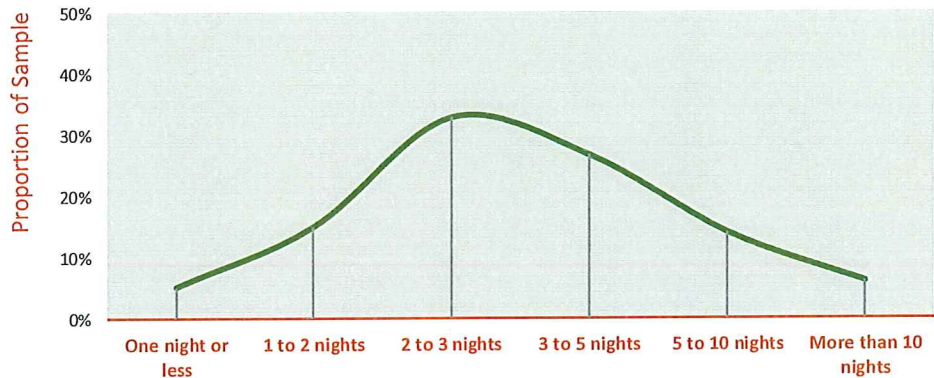
Source: 2017 Visitor Survey; Economic & Planning Systems
 H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Data\163053-Survey Data-062118.xlsx\T1 - Destinations

Figure 20 illustrates the distribution of responses by the length of trip. Overall, the average trip length of all visitors was 4.9 nights.¹⁶ The distribution of trip lengths is well-proportioned across the spectrum. Twenty (20) percent of visitors had trip lengths of 2 or fewer nights, one-third of visitors’ trips were 2 to 3 nights, less than 30 percent of visitors’ trips were 3 to 5 nights, and twenty (20) percent of trips were 5 or more nights.

Figure 20
Length of Trip

Distribution of Length of Trip

Median = 3 nights;
Mean = 4.9 nights



Source: 2017 Visitor Survey; Economic & Planning Systems
 H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Data\163053-Survey Data-062118.xlsx\T2 - Dist of Nights

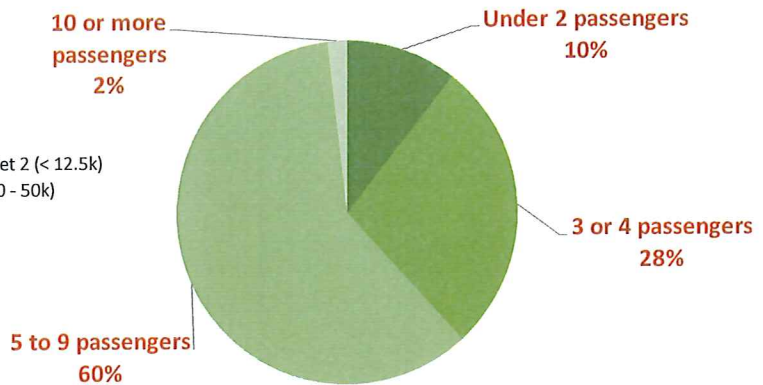
¹⁶ This compares to RRC Associates 2014 survey for the North Lake Tahoe Resort Association that found an average length of stay of 4.1 nights. This also compares to a report for the North Lake Tahoe Resort Association by Dean Runyan Associates that found that the average length of trip for visitors by air was 5.6 days.

EPS worked with airport staff to identify the typical aircraft load factors to estimate the type of aircraft by which visitors were likely to have arrived. Visitors identified the number of passengers on their aircraft and responses were categorized to align with aircraft capacities and typical load factors. Sixty (60) percent of visitors arrived on aircraft with 5 to 9 passengers, nearly 30 percent arrived on aircraft with 3 to 4 passengers, and 10 percent of visitors arrived on aircraft with 2 or fewer passengers, while approximately 2 percent of visitors arrived on aircraft with 10 or more passengers.

Figure 21
Visitors by Aircraft Capacity

Distribution of Visitors by Aircraft Capacity

Passenger Capacity	Aircraft Equivalents
Under 2 passengers	Piston
3 or 4 passengers	Piston Twin, Turboprop, Jet 2 (< 12.5k)
5 to 9 passengers	Jet 3 (12.5 - 20k), Jet 4 (20 - 50k)
10 or more passengers	Jet 5 (50k+)



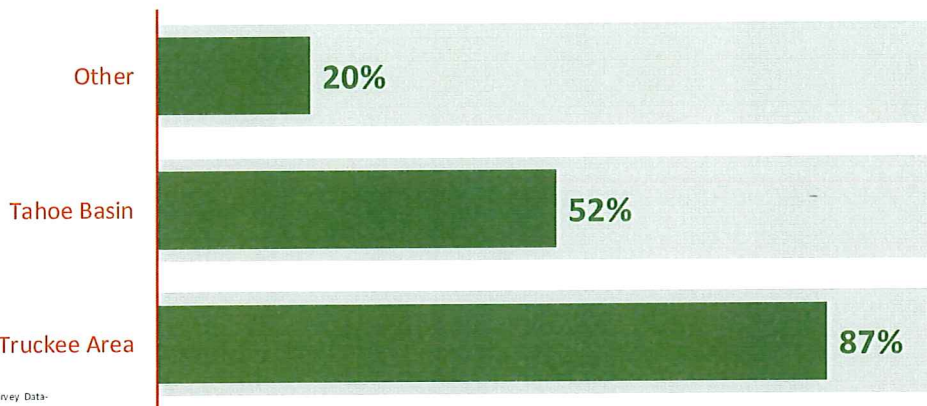
Source: 2017 Visitor Survey; Economic & Planning Systems
 H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Data\163053-Survey Data-071318.xlsx\T1 - Destinations

Overall, slightly more than 80 percent of all the visitors surveyed owned a vacation home in the area, with vacation homeownership rates varying according to visitor destinations: Nearly 90 percent of those on the Truckee Area indicated they owned a vacation home in the area, compared to just over half of visitors headed to the Tahoe Basin, and only 20 percent of those going to other areas like Reno, South Lake Tahoe, Nevada City and Minden.

Figure 22
Vacation Home Owner

Rates of Vacation Homeownership by Destination

"Other" includes: Reno, South Lake Tahoe, Nevada City, and Minden.



Source: 2017 Visitor Survey; Economic & Planning Systems
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Using the various response distributions and factors from the survey and extrapolating to the total number of passengers per year, it is estimated that users of the airport own nearly 1,100 vacation homes in the TTAD. Additional factors used in this analysis were the average number of visits per year (seven) and the average number of visitors per travel party, i.e. assuming that a single travel party uses a single vacation home.

Figure 23
Estimated Airport User Vacation Homes

**Estimated Vacation
Housing Units Owned by
Airport Visitors**

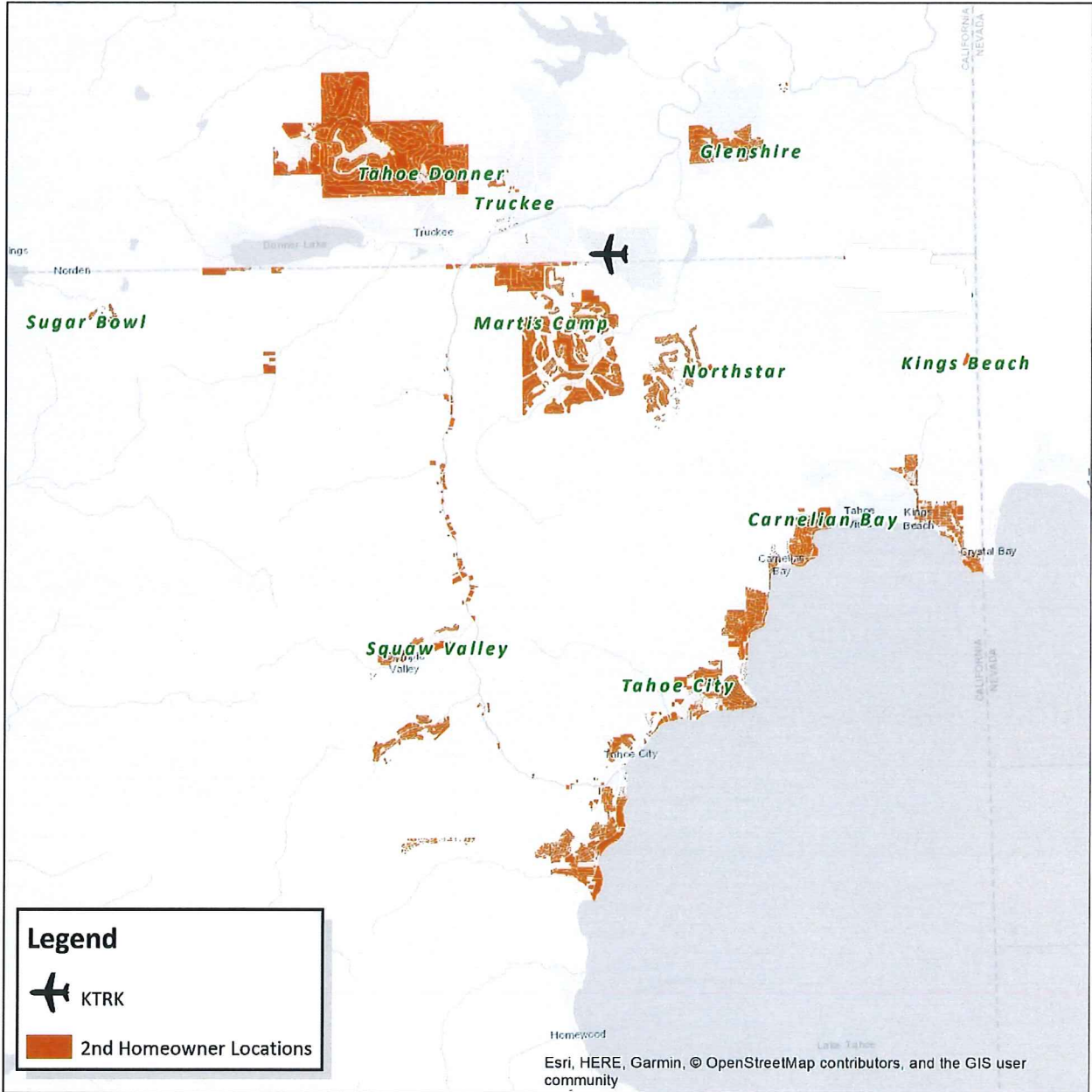
Location	Visitors by Area	Visitors	% Visitors with Vacation Homes	Visitors with Vacation Homes	Visits / Year	Persons per Visit	Visitors per Travel Party	Estimated Number of Units
Truckee Area	85%	34,898	87%	30,207	7	4,315	4.4	975
Tahoe Basin	14%	5,784	52%	2,988	7	427	3.9	110
Total		40,682		33,196		4,742		1,085

Source: Economic & Planning Systems

C:\Users\dschwartz.EPSDEN\Desktop\163053\163053-Placer
County Parcel Data.xlsx\TABLE 4 - Unit Methodology

Using Placer and Nevada County Assessor data, the common locations of visitors with vacation homes were identified and mapped, as illustrated in **Figure 24**.¹⁷

Figure 24
Vacation Homeowner Areas



¹⁷ The analysis of 2nd homeowner property valuation and location utilizes the location indicated by survey respondents. As a result, this visualization and the estimation of total property residential valuation of those respondents indicating merely "West Shore" does not reflect their 2nd home locations. For example, it is observed that residential properties along the shore of Lake Tahoe between Tahoe City and Homewood are 2nd homes, but they are not visualized in the map above.

Using assessor data from both counties and identifying the average residential property value in these records (representative of 2017 values), it is estimated that the distribution of 1,000 vacations homes is nearly \$1.6 billion, accounting for 8.7 percent of the TTAD’s total taxable residential property valuation.¹⁸

**Figure 25
Estimated Vacation Home Property Valuation**

**In-District Estimated
Airport Visitor Vacation
Home Property Valuation**

Location	Average Residential Property Valuation	Distribution of Vacation Home Ownership	Estimated Vacation Homes by Location	Estimated Total Property Valuation of Vacation Homes
Truckee Area				
Carnelian Bay	\$573,756	1%	9	\$5,328,358
Glenshire	\$344,296	1%	9	\$3,197,409
Incline	\$608,597	18%	176	\$107,386,537
Martis Camp	\$2,727,346	44%	427	\$1,165,103,443
Northstar	\$687,053	14%	139	\$95,707,958
Squaw Valley	\$608,597	6%	56	\$33,911,538
Tahoe Donner	\$470,858	15%	149	\$69,964,206
<u>Truckee</u>	<u>\$1,385,726</u>	<u>1%</u>	<u>9</u>	<u>\$12,868,966</u>
Subtotal		100%	975	\$1,493,468,414
Tahoe Basin				
Tahoe City	\$831,466	86%	95	\$78,744,316
<u>West Shore</u>	<u>\$564,096</u>	<u>14%</u>	<u>16</u>	<u>\$8,791,106</u>
Subtotal		100%	110	\$87,535,422
Total			1,085	\$1,581,003,836
as % District Residential Property Valuation	\$18,245,086,569			8.7%

Source: 2017 Visitor Survey; Placer and Nevada Counties; Economic & Planning Systems

C:\Users\dschwartz.EPSDEN\Desktop\163053\163053- Placer County Parcel Data.xlsx\TABLE5 - Estd Property Val

¹⁸ Refer to **Figure 11** on page 14 for details of total taxable property valuation.

To illustrate the estimated number of vacation homes by location, EPS also totaled the number of residential property records by location and compared them against the estimated total vacation homes by location. This quantification does not hold implications for the economic impact analysis but was completed to align underlying assumptions regarding the proportion of airport users who own homes in respective areas throughout the TTAD.

**Figure 26
Airport User-Owned Vacation Homes as Portion of Location**

**Estimated Vacation Homes
as Portion of Homes by
Location**

	Estimated Total Homes by Location	Estimated Vacation Homes by Location	as % of Estimated Total
Location			
<u>Truckee Area</u>			
Carnelian Bay	2,154	9	0.4%
Glenshire	756	9	1.2%
Incline	n/a	176	n/a
Martis Camp	658	427	64.9%
Northstar	1,558	139	8.9%
Squaw Valley	484	56	11.5%
Tahoe Donner	5,982	149	2.5%
<u>Truckee</u>	<u>189</u>	<u>9</u>	<u>4.9%</u>
Subtotal	11,781	975	8.3%
<u>Tahoe Basin</u>			
Tahoe City	4,707	95	2.0%
<u>West Shore</u>	<u>n/a</u>	<u>16</u>	<u>n/a</u>
Subtotal West Shore	4,707	110	2.3%
Total	16,488	1,085	6.6%

Source: 2017 Visitor Survey; Placer and Nevada Counties;
Economic & Planning Systems

C:\Users\ldschwartz.EPSDEN\Desktop\163053\163053-Placer
County Parcel Data.xlsx\TABLE6 - Vac Homes as %

Visitor Spending

Visitors were asked to estimate the magnitude of daily spending on either an individual basis or on the basis of their travel party on their most recent or upcoming trip. Spending categories included lodging (if not in their own vacation home), shopping and general retail, entertainment and recreation, and food and beverage. Daily spending factors were developed and are reported in the following series of tables, along with other visitation factors such as the average number of nights per trip and the distribution of visitors by general location.

Lodging

Less than 20 percent of all airport visitors are estimated to utilize lodging establishments for their trips. Based on the responses given, it is estimated that the average nightly spending on lodging is approximately \$380. Figuring more than 19,074 total nights for the nearly 7,800 visitors with an average visitors-per-room factor of 2.0, annual spending is estimated to be approximately \$7.1 million, as shown in **Figure 27**.

Figure 27
Visitor Accommodation Spending

Nightly and Estimated Total Spending on Accommodations in North Lake Tahoe

	Accommodations Spending								
	Visitor Distr.	Est'd Visitors	% Paid Accom.	Visitors in Persons		Avg. # Nights per Trip	Avg. \$		Total
				Paid Accom.	per Room		Total Nights	per Night	
Individual (per trip)									
Truckee Area	85%	34,898	13%	4,691	2.0	5.10	11,962	\$382	\$4,574,224
Tahoe Basin	14%	5,784	48%	2,796	2.0	3.69	5,158	\$433	\$2,232,981
<u>Other</u>	1%	<u>386</u>	<u>80%</u>	<u>308</u>	<u>2.0</u>	<u>4.27</u>	<u>659</u>	<u>\$379</u>	<u>\$249,561</u>
Total	100%	41,068	19%	7,795	2.0	4.89	19,074	\$379	\$7,056,766

Source: 2017 Visitor Survey; Economic & Planning Systems

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Shopping & Retail Spending

Based on responses from the Visitor Survey, the average daily per person spending on shopping and general retail was approximately \$31. In total, it is estimated that airport users spend approximately \$6.2 million per year in this spending category.

Figure 28
Visitor Retail Spending

Daily & Estimated Total Shopping & Retail Spending in North Lake Tahoe

	Shopping & Retail Spending					
	% Visitor Distr.	Est'd Visitors	Avg. Days per Trip	Total Days	Avg. Daily \$	Total
Individual (per trip)						
Truckee Area	85%	34,898	5.10	177,993	\$32.38	\$5,764,179
Tahoe Basin	14%	5,784	3.69	21,345	\$19.88	\$424,450
<u>Other</u>	1%	<u>386</u>	<u>4.27</u>	<u>1,648</u>	<u>\$26.78</u>	<u>\$44,123</u>
Total	100%	41,068	4.89	200,986	\$31.05	\$6,232,752

Source: 2017 Visitor Survey; Economic & Planning Systems

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While most of this category of spending is not taxable, analysis of the Visitor Survey indicated an average of approximately \$43 per day per person on entertainment and recreation, totaling approximately \$8.6 million over the course of the year.

Figure 29
Visitor Entertainment Spending

Daily & Estimated Total Entertainment Spending in North Lake Tahoe

	Entertainment Spending					
	% Visitor Distr.	Est'd Visitors	Avg. Days per Trip	Total Days	Avg. Daily \$	Total
Individual (per trip)						
Truckee Area	85%	34,898	5.10	177,993	\$43.61	\$7,761,405
Tahoe Basin	14%	5,784	3.69	21,345	\$34.52	\$736,779
<u>Other</u>	1%	<u>386</u>	<u>4.27</u>	<u>1,648</u>	<u>\$49.28</u>	<u>\$81,201</u>
Total	100%	41,068	4.89	200,986	\$42.67	\$8,579,385

Source: 2017 Visitor Survey; Economic & Planning Systems

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Food & Beverage

Daily per person food and beverage spending is estimated to be approximately \$52, and the total annual spending in this category is estimated at \$10.4 million.

Figure 30
Visitor Food & Beverage Spending

Daily & Estimated Total Food & Beverage Spending in North Lake Tahoe

	Food & Beverage Spending					
	% Visitor Distr.	Est'd Visitors	Avg. Days per Trip	Total Days	Avg. Daily \$	Total
Individual (per trip)						
Truckee Area	85%	34,898	5.10	177,993	\$53.33	\$9,492,352
Tahoe Basin	14%	5,784	3.69	21,345	\$39.55	\$844,150
<u>Other</u>	1%	<u>386</u>	<u>4.27</u>	<u>1,648</u>	<u>\$38.93</u>	<u>\$64,145</u>
Total	100%	41,068	4.89	200,986	\$51.76	\$10,400,648

Source: 2017 Visitor Survey; Economic & Planning Systems

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Total Spending

Altogether spending on accommodations, food and beverage, and shopping and retail total approximately \$21.6 million per year. Factoring out a portion of food and beverage spending assumed to be non-taxable (such as groceries), it is estimated that airport visitation supports approximately 2.9 percent of the accommodations spending in the District and 4.8 percent of the total retail spending in the District, as shown in **Figure 31**.

Figure 31
Airport Visitor Spending as % of District

Airport Visitation-Related Spending as % of Total District Spending

	Annual Spending as % of Airport District Economy				
	Airport Visitation-Related Spending	Taxable Portion of Spending	Airport Visitation-Related Spending (Net Taxable)	Total District Spending	Airport Visitation Spending as % of District
Lodging					
Accommodations	\$7,056,766	100%	\$7,056,766	\$244,757,317	2.9%
Retail Sales					
Food & Beverage	\$10,400,648	80%	\$8,320,518	\$124,244,215	6.7%
Shopping & Retail	\$6,232,752	100%	\$6,232,752	\$182,099,653	3.4%
Subtotal	\$16,633,399	--	\$14,553,270	\$306,343,867	4.8%

Source: Economic & Planning Systems

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Visitor Demand Elasticity

The following series of findings reflect the degree of demand elasticity airport visitors have for visiting the North Lake Tahoe area. Questions to gauge the strength of this demand were asked in order to assess different aspects of the strength of their demand. Such questions included: 1) how likely are you to return to the area for another visit; 2) how likely would you be to return if the airport did not operate; 3) how likely would you be to use the airports at Reno or Sacramento and drive the remainder of the distance; and 4) how likely would you be to use the South Lake Tahoe airport.

The first question on likeliness to return to the area was not asked in the intercept version; only a few questions were not asked of individuals in an effort to keep the survey as brief as possible. Among those that answered the question in the weblink version, 98 percent indicated they are very likely to return for a visit.

Figure 32
Likelihood of Returning for Visit

Likelihood to Return to the North Lake Tahoe Area

	Survey			as % of Responses		
	Email	Intercept	Total	Email	Intercept	Total
Likelihood						
Very likely	187	n/a	187	98%	n/a	98%
Somewhat likely	1	n/a	1	1%	n/a	1%
Neutral	0	n/a	0	0%	n/a	0%
Somewhat unlikely	1	n/a	1	1%	n/a	1%
<u>Very unlikely</u>	<u>1</u>	<u>n/a</u>	<u>1</u>	<u>1%</u>	<u>n/a</u>	<u>1%</u>
Total	190	n/a	190	100%	n/a	100%

Source: 2017 Visitor Survey; Economic & Planning Systems

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More than a third of visitors overall indicated they would be very unlikely to return to the area if it were not for the airport. Interestingly, just 15 percent of visitors completing the weblink version of the survey indicated this degree of unlikeliness compared to 56 percent of those who completed the intercept survey.

Figure 33
Likelihood of Returning if No Airport

Likelihood of Returning to North Lake Tahoe if No Airport

	Survey			as % of Responses		
	Email	Intercept	Total	Email	Intercept	Total
Likelihood						
Very likely	65	19	84	34%	10%	22%
Somewhat likely	33	24	57	17%	12%	15%
Neutral	28	21	49	15%	11%	13%
Somewhat unlikely	35	23	58	19%	12%	15%
<u>Very unlikely</u>	<u>28</u>	<u>112</u>	<u>140</u>	<u>15%</u>	<u>56%</u>	<u>36%</u>
Total	189	199	388	100%	100%	100%

Source: Nevada & Placer counties; Economic & Planning Systems

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Again, there was variation between the weblink and intercept survey versions in indicating whether or not a visitor was very unlikely to use either the airport at Reno or Sacramento and drive the remainder of the distance. For those filling out the weblink version, more than one-third indicated they were unlikely to do so, whereas 54 percent of visitors indicated such in the intercept version.

Figure 34
Likeliness to Use RNO or SMF and Drive

Likelihood of Using Reno or Sacramento and Driving Remainder of Distance

	Survey			as % of Responses		
	Email	Intercept	Total	Email	Intercept	Total
Likelihood						
Very likely	33	33	66	17%	17%	17%
Somewhat likely	34	29	63	18%	15%	16%
Neutral	21	13	34	11%	7%	9%
Somewhat unlikely	33	16	49	17%	8%	13%
<u>Very unlikely</u>	<u>69</u>	<u>108</u>	<u>177</u>	<u>36%</u>	<u>54%</u>	<u>46%</u>
Total	190	199	389	100%	100%	100%

Source: 2017 Visitor Survey; Economic & Planning Systems

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Visitors were most likely, however, to indicate that they were very unlikely to use the South Lake Tahoe airport, with approximately three-quarters of visitors indicating so.

Figure 35
Likelihood to Use South Lake Tahoe Airport

Likelihood of Using South Lake Tahoe Airport

	Survey			as % of Responses		
	Email	Intercept	Total	Email	Intercept	Total
Likelihood						
Very likely	3	25	28	2%	13%	7%
Somewhat likely	3	20	23	2%	10%	6%
Neutral	6	7	13	3%	4%	3%
Somewhat unlikely	17	12	29	9%	6%	8%
<u>Very unlikely</u>	<u>162</u>	<u>128</u>	<u>290</u>	<u>85%</u>	<u>67%</u>	<u>76%</u>
Total	191	192	383	100%	100%	100%

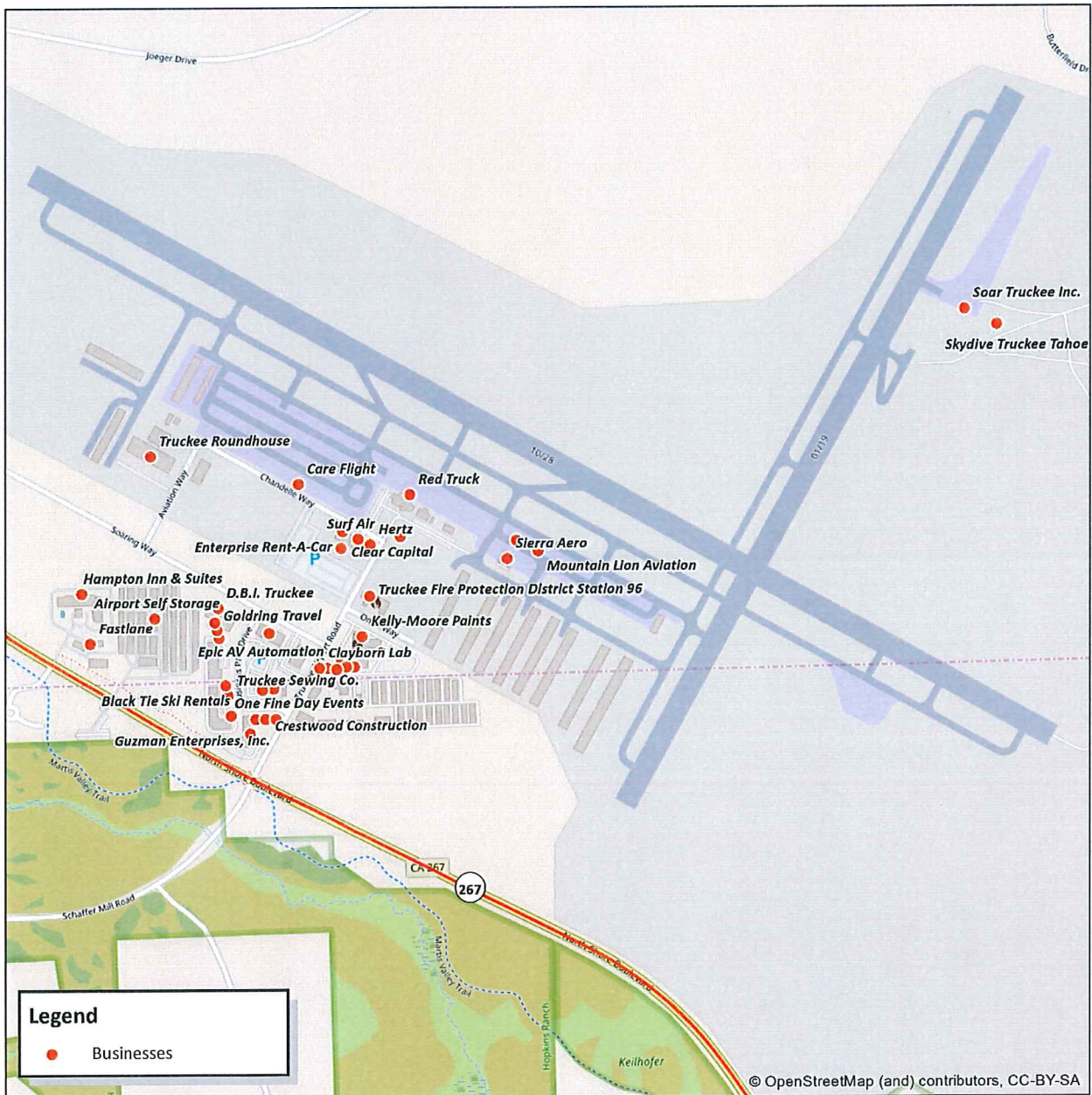
Source: 2017 Visitor Survey; Economic & Planning Systems

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Business Survey

A survey of 45 businesses located within 1 mile of the airport was also completed to assess the dynamics of businesses related or unrelated to the operations of the airport or its users. Hansford Consulting, subconsultant to EPS, conducted these surveys in person and over the phone to document employment and financial information, as well as assessments of the extent to which their respective businesses were dependent on the airport. Approximately 70 percent of the businesses fully responded to the survey questions, which are reflected in the following analysis.

Figure 36
Location of Businesses in Proximity to Airport



Employment

Businesses surveyed ranged from home builders, aircraft mechanics, emergency air medical transportation, the fire station, private airplane rentals, travel agencies, upholstery, a waffle supplier, insurance agencies, a dentistry, storage, hotel, restaurant, and a gas station. On average, these businesses have been operating for 18 years in the area and about 11 at their current location. In total, the businesses indicated they had nearly 77,000 customers or clients representative of 2017 and of those, nearly 9,000 were most likely to be airport users.

During high season, or for those businesses with year-round consistent employment levels, these businesses employed 314 full-time employees and 50 part-time employees, as shown in **Figure 37**. On average, approximately three-quarters of the workers employed by these businesses live in the North Lake Tahoe region.

Figure 37
Employment Distribution of Business in Proximity to Airport

Distribution of High Season Employment of Businesses On and Surrounding Airport by Industry

	High Season Employment			as %
	Full-time	Part-time	Total	
Industry				
Agriculture, Forestry, Fishing and Hunting	0	0	0	0.0%
Mining, Quarrying, and Oil and Gas Extraction	0	0	0	0.0%
Utilities	0	0	0	0.0%
Construction	111	10	121	33.1%
Manufacturing	12	0	12	3.3%
Wholesale Trade	21	1	22	6.1%
Retail Trade	46	6	52	14.3%
Transportation and Warehousing	19	16	35	9.6%
Information	0	0	0	0.0%
Finance and Insurance	16	0	16	4.4%
Real Estate and Rental and Leasing	4	4	8	2.2%
Professional, Scientific, and Technical Services	0	0	0	0.0%
Management of Companies and Enterprises	0	0	0	0.0%
Administration & Support, Waste Management and Remediation	17	8	25	6.9%
Educational Services	0	0	0	0.0%
Health Care and Social Assistance	23	0	23	6.3%
Arts, Entertainment, and Recreation	3	0	3	0.8%
Accommodation and Food Services	30	5	35	9.6%
Other Services (excluding Public Administration)	0	0	0	0.0%
<u>Public Administration</u>	<u>12</u>	<u>0</u>	<u>12</u>	<u>3.3%</u>
Total	314	50	364	100.0%

Source: Airport Property Business Survey; Hansford Consulting; Economic & Planning Systems

H:\163053- Truckee Tahoe CA Airport Economic Impact Study\Data\163053-Airport Businesses-071319.xlsx\TABLE 1- Jobs by NAICS

In total, the 364 jobs in these businesses account for just over 2 percent of the TTAD’s total wage and salary workforce. The presence of a few industries was proportionally very high— jobs in wholesale trade accounted for 27 percent of the TTAD’s total wholesale trade, transportation and warehousing jobs accounted for 31 percent, and finance and insurance jobs account for 13 percent.

Figure 38
Employment of Businesses in Proximity to Airport as % of District

**Employment of Businesses
 On and Surrounding Airport
 by Industry as Portion of
 Total Employment In
 District**

	Total District Jobs	Airport Proximity Jobs	as %
Industry			
Agriculture, Forestry, Fishing and Hunting	6	0	0.0%
Mining, Quarrying, and Oil and Gas Extraction	7	0	0.0%
Utilities	294	0	0.0%
Construction	2,395	121	5.0%
Manufacturing	236	12	5.1%
Wholesale Trade	81	22	27.1%
Retail Trade	1,429	52	3.6%
Transportation and Warehousing	114	35	30.8%
Information	130	0	0.0%
Finance and Insurance	123	16	13.0%
Real Estate and Rental and Leasing	705	8	1.1%
Professional, Scientific, and Technical Services	612	0	0.0%
Management of Companies and Enterprises	46	0	0.0%
Administration & Support, Waste Management and Remediation	654	25	3.8%
Educational Services	1,071	0	0.0%
Health Care and Social Assistance	1,332	23	1.7%
Arts, Entertainment, and Recreation	2,271	3	0.1%
Accommodation and Food Services	4,693	35	0.7%
Other Services (excluding Public Administration)	924	0	0.0%
<u>Public Administration</u>	<u>363</u>	<u>12</u>	<u>3.3%</u>
Total	17,485	364	2.1%

Source: Airport Property Business Survey; Hansford Consulting; Economic & Planning Systems

H:\163053- Truckee Tahoe CA Airport Economic Impact Study\Data\163053-Airport Businesses-071318.xlsx]TABLE2 - Jobs as % of Dist

Airport Dependency

Although many businesses had trouble quantifying the impact of the airport on their business as they do not track customer data to a degree detailed enough to know if customers are also airport users, businesses were asked a few different questions to gauge the level of airport dependency. Asked what portion of their businesses they might lose if the airport were not operating, businesses on average indicated that they might see a 21-percent revenue loss. When asked whether their business was dependent on the airport (“yes” or “no”), 22 percent of businesses indicated that they are.

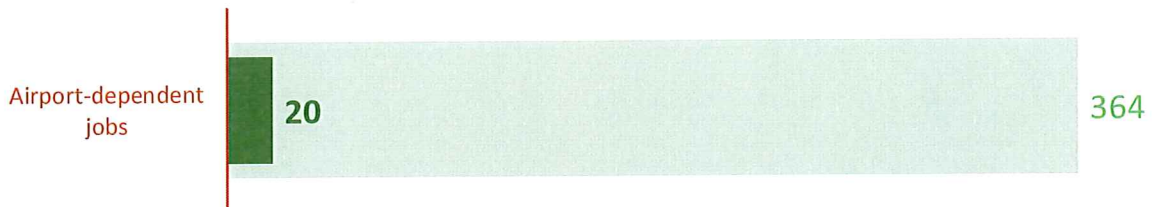
Figure 39
Airport Dependency for Business in Proximity to Airport



Source: Airport Business Survey; Hansford Consulting; Economic & Planning Systems

Of further interest was the quantification of jobs that businesses might have to shed were the airport to cease operations. Only two types of responses were given to this question: 1) that a business quantified the number of jobs lost; and 2) that a number of jobs would need to be relocated outside the region (Reno or further). Of the 364 jobs, business owners or representatives indicated that they would be forced to cut or relocate 20 jobs (5.5 percent of the sample) outside the region.

Figure 40
Jobs Lost or Relocated Outside Region if No Airport

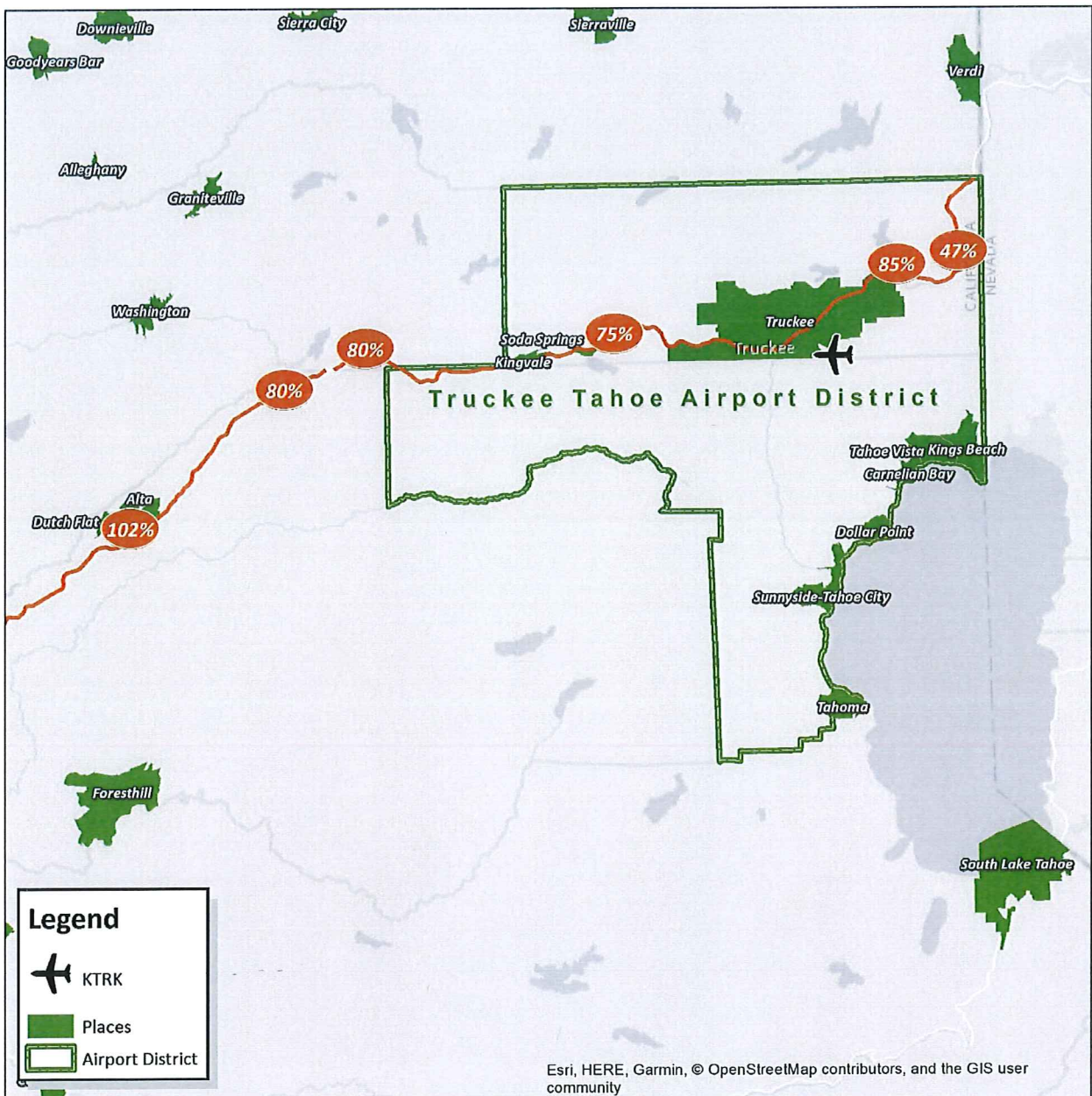


Source: Airport Business Survey; Hansford Consulting; Economic & Planning Systems

Transportation System Capacity

Interstate 80 is the main access corridor to the North Lake Tahoe area outside of the Airport. To illustrate the transportation infrastructure constraints and highlight the importance the airport, data from the California Department of Transportation was collected to identify the current and projected traffic volumes, capacity, and planned highway improvements. The main metric evaluated was the volume of traffic over its design capacity (volume over capacity = VOC), which is used to illustrate level of service. **Figure 41** illustrates the estimated VOC in 2030 with major expansion and capital improvement plans (such as road widening or improvements) incorporated. Even with improvements, I-80 remains at a very low level of service, meaning that it cannot handle much more volume without approaching complete roadway failure.

Figure 41
Horizon Year Volume Over Capacity with Expansion Plans (2030)



Analysis of land use development trends

Generally speaking, developing projects in the high Sierras is difficult, and developing within the Tahoe Basin is particularly so. Many conditions contribute to this level of difficulty, such as the ecological sensitivity of the natural environment and the propensity to mitigate the negative impacts of new development on such environs. Other contributing factors include high construction costs due to the region's remote location, a construction season limited by weather, and a general shortage for construction labor in California. A complex web of regulations and restrictions on land use and development across various state and county jurisdictions adds another layer to the development process.

Within the Tahoe Basin, the Tahoe Regional Planning Agency (TRPA) oversees strict land use regulations designed to protect critical environmental resources have dampened private-sector investment in new commercial properties and tourist accommodations. The southern reaches of the TTAD fall within the Tahoe Basin, encompassing existing communities along the northern and western shores of Lake Tahoe, the largest of which are Tahoe City and Kings Beach. These two communities have served as lakeside hubs of tourist activity for much of the last century, but lackluster investment has threatened their positions as vibrant town centers. Recognizing the need to spur new investment activity, Placer County has committed to developing a programmatic business plan to implement economic development incentives designed to achieve development projects in the Town Centers that complement key environmental sustainability objectives and promote economic sustainability of the Tahoe Basin. This marks a shift from previous land use patterns characterized by piecemeal development towards a more holistic land use strategy by which development rights from throughout the Basin can be transferred to key development nodes such as the Town Centers. This emerging land use trend concentrates development within more dense communities, potentially minimizing land coverage, assuaging environmental impacts, and curtailing the worsening traffic conditions of the region's already congested road network.

Much of the TTAD falls outside of Tahoe Basin and therefore not subject to additional TRPA regulations. As such, much of the future large-scale development within the TTAD is planned for areas outside of the Basin, most notably at Martis Valley, Squaw Valley, and within the Town of Truckee.

Land Use Development Plans

Truckee Tahoe Airport is integrated into the region's growth and development to a greater extent than may be recognized. The airport user survey results demonstrate that approximately 81 percent of respondents own vacation homes in the District, indicating that some of the demand driving the current predominance of residential construction activity may be attributed to airport users. Similarly, some of the construction-related business and employment in the region related to second home and resort-oriented land use development may be attributed to airport activity.

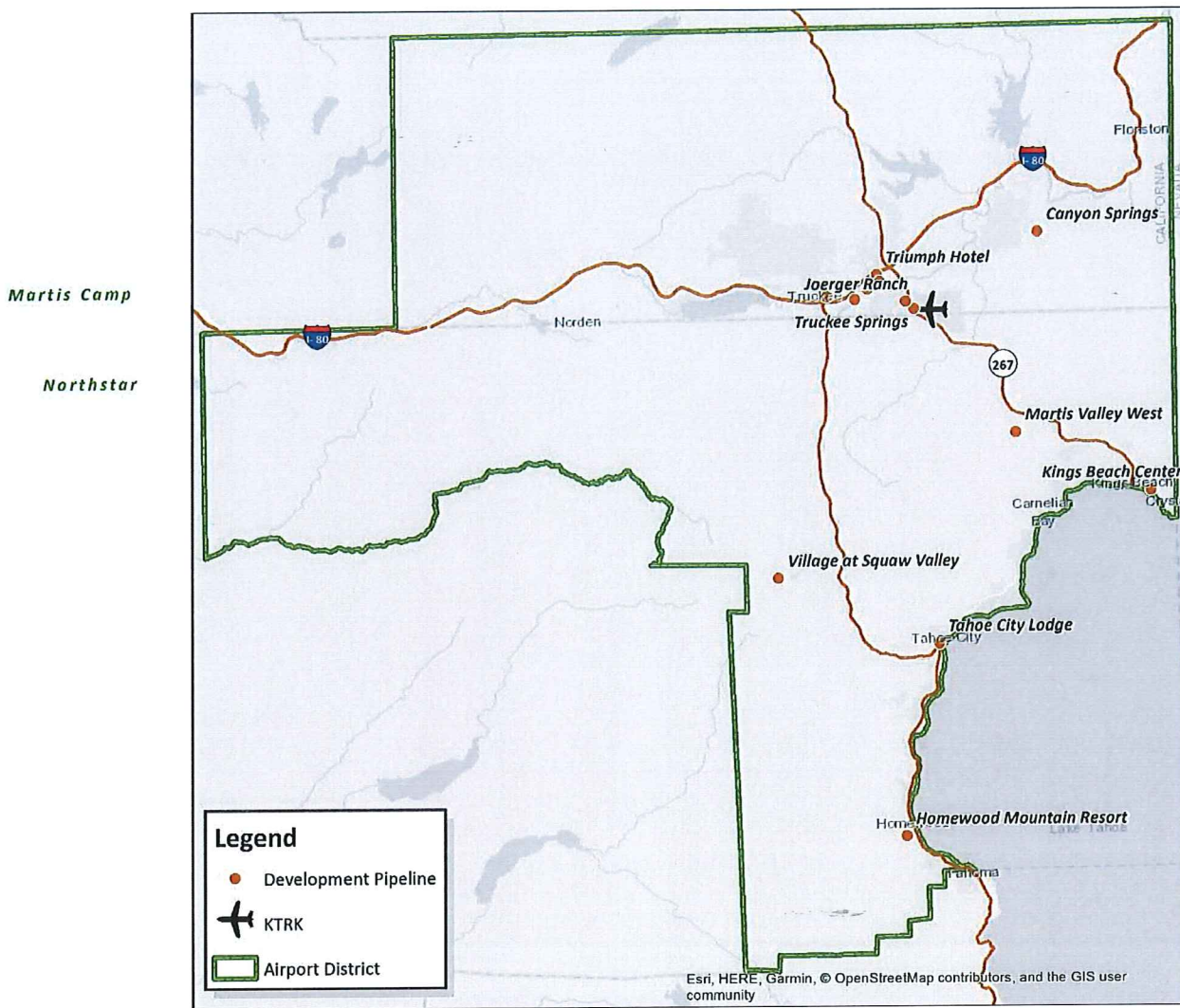
Based on a series of planning documents, proposed projects, and conversations with planning staff at various jurisdictions, within the TTAD, there is a substantial amount of new commercial, residential, and hospitality projects in the development pipeline over the next decade.

Considering only major projects in the development pipeline (i.e., excluding small-scale development such as single-family home construction on a single parcel), 2,600 residential

housing units will be delivered within the District, in a variety of product types offered at a wide range of price points. Approximately 15 percent (400 units) of these residences are identified as affordable or workforce housing and almost certainly all meant for the local residential market. The vast majority of the units (85 percent) will be "market-rate," but those too will be targeted towards various market segments, with the approximately 700 planned multifamily units likely targeted towards the local residential market. However, plans throughout the District also call for the following market-rate units: over 600 single-family homes, 165 full ownership condominiums, and 151 cabins. Some of these projects are proposed at resorts and will almost exclusively be for vacation homeowners, such as the penthouse condominiums proposed at Homewood Mountain Resort. Non-resort developments are likely to have a more mixed group of owners.

In addition to residential units, major projects in the pipeline will deliver a substantial number of new tourist accommodation units (TAUs) as well as a considerable amount of other nonresidential uses. Over 1,300 TAUs are in the pipeline, comprised of over 867 condominium-hotel units, 319 conventional hotel rooms, and 140 fractional/time-share units. Major additions to the region's commercial uses include over 250,000 square feet of office space, over 9000,000 square feet of retail space, and approximately 200,000 square feet of industrial space. The addition of these commercial uses has the potential to create economic stability within the region, providing local jobs and amenities that may reduce the need to commute.

Figure 42
Development Plan Locations



3. ECONOMIC IMPACTS

Basic Metrics

The basic regional metrics identified in this analysis include employment, labor income, value-added, the equivalent of Gross Regional Product (GRP), and total output, the equivalent of final demand for goods and services.

- Employment & Labor Income includes the number of full- and part-time jobs, measured in terms of wage and salary positions, not including sole proprietor employment. The employment impacts analysis uses both the baseline data collected from national and state level sources with data collected directly from the TTAD, its vendors, as well as from the Visitor Survey. The employment impacts are evaluated in terms of direct, indirect, and induced job categories. In terms of standard economic impact analysis, EPS identified the number of direct jobs employed by the airport and working exclusively for the airport – i.e. salaried and contract labor by NAICS industry; the number of industries of indirect jobs resulting from the airport's business to business activities, and the jobs related to the household spending of direct and indirect job-holders' households. Labor income is wages and benefits of full- and part-time workers including salaried, contract labor, as well as the benefits paid by the employer.
- Gross Regional Product & Total Spending also uses data on total expenditures from the airport, businesses, and the spending of leisure and business travelers. Data and information collected through the Traveler Survey was used to make the two apportionments. EPS also utilized IMPLAN for this task as a separate point of validation to the total spending estimates, providing the District with a point of analytical comparison by using two different techniques.

Standard Economic Impacts

In terms of quantifiable economic contributions, the metrics described above were run through IMPLAN input-output modeling software.¹⁹ IMPLAN is structured to account for trade flows and industry profiles within the defined economic unit—in this case, using baseline input-output data for Nevada and Placer counties. Such analysis provides an estimate of the multiplier effects, or the "ripple effect", of an "impact" or "demand" from industries within the area economy. Three main components to the characterization of economic impacts are as follows:

- Direct Impacts: are the economic activities carried out by a specific industry, such as the labor it employs; wages; property and sales taxes paid; and the goods, services and real estate it purchases or leases in its operations.
- Indirect Impacts: derive primarily from business-to-business activities, such as the lease and purchase of equipment for operations, and the legal, financial and administrative services that may be procured in the process of conducting direct activities. In an industry, indirect impacts most often include manufacturers of equipment, the legal profession, professional

¹⁹ Minnesota IMPLAN Group, Inc. (MIG), Hudson, WI, www.implan.com

and technical services, and finance and insurance. These impacts will quantify the extent of that integration in terms of jobs, contribution to gross regional product (GRP), and wages.

- **Induced Impacts:** are the ripple effects of the direct and indirect impacts on the larger economy. They include the local expenditures made by households of the direct and indirect industry jobs. These effects are the increases in employment and expenditure created by successive rounds of local spending and hiring, as individuals or firms associated with the industry buy goods and services in the local economy.

Airport-Dependent Impacts

A specific nuance of this analysis is the application of demand elasticity information from both the Visitor Survey and the Business Survey. In both survey efforts, respondents were asked several questions to gauge, quantify, and/or estimate the level of dependence their travel or business operations had on the operation of the airport. Visitors were asked questions about their likeliness to return to the region if the airport ceased to operate and were also asked their likeliness to use the airports in Reno, Sacramento, or even South Lake Tahoe and drive the remainder of the distance. Businesses in proximity to the airport were asked what portion of their sales or services were dependent on the airport and whether closure of the airport would require them to either relocate outside the region or close the business.

For both components of this analysis, EPS has applied only the tier of responses to these surveys that indicated visitors would be “very unlikely” to return and only the businesses that indicated they would relocate or close operations. The findings are then compared to the total airport-related economic activity and the total District economic activity to assess the respective portions of which would be impacted by the loss of the airports operations.

Economic Activity

District Activity

There are nearly 17,500 jobs in the TTAD that meet the needs of \$2.1 billion in final demand for goods and services (i.e. output) in the District. This level of economic activity contributes more than \$1.2 billion to the regional GRP, including approximately \$760 million in labor income. The ripple effects of the TTAD’s economic activity reaches beyond its geographic boundaries and generates demand for an additional 8,600 jobs, which support an additional \$1.2 billion in final demand for goods and services and add another \$750 million to the regional GRP.

Figure 43
Total Economic Activity in Truckee Tahoe Airport District

Total Economic Activity in Truckee Tahoe Airport District	Levels			Total
	Direct	Indirect	Induced	
Economic Activity				
Employment	17,486	3,812	4,856	26,154
Labor Income	\$758,119,667	\$181,833,135	\$223,375,527	\$1,163,328,329
Value-Added (GRP)	\$1,244,101,828	\$340,340,180	\$409,311,456	\$1,993,753,463
Output (Final Demand)	\$2,120,915,454	\$581,864,708	\$660,343,127	\$3,363,123,289

Source: Economic & Planning Systems
 H:\93053-Truckee Tahoe CA Airport Economic Impact Study\Models\93053-Economic Impacts-070918 District economic activity 2017 est All Impact Detail.xls\TABLE 1- Summary

Surrounding Business Activity

Using data from the Business Survey, there are 364 jobs in businesses surrounding and on the airport property, meeting the needs of \$55 million in final demand for goods and services (i.e. output) in or outside the District. This level of economic activity contributes more than \$30 million to the regional GRP, including approximately \$19 million in labor income. This level of activity ripples through the District, generating demand for another 230 jobs, which support nearly \$33 million in additional final demand for goods and services and add another \$19 million to the region's GRP.

Figure 44
Economic Activity of Businesses in Proximity to Airport

**Economic Activity of
Businesses in Proximity to
Airport**

	Levels			Total
	Direct	Indirect	Induced	
Economic Activity				
Employment	364	105	125	594
Labor Income	\$19,206,334	\$4,983,085	\$5,751,885	\$29,941,305
Value-Added (GRP)	\$30,152,557	\$9,001,756	\$10,540,026	\$49,694,339
Output (Final Demand)	\$55,392,178	\$15,716,320	\$17,004,190	\$88,112,687

Source: Economic & Planning Systems

H:\63053-Truckee Tahoe CA Airport Economic Impact Study\Models\63053-Economic Impacts-070918 Airport proximity business activity All Impact Detail.xlsx\TABLE 1- Summary

To illustrate a portion of the indirect impacts of the airport, the following analysis is given as an example of the ripple effects of businesses in the proximity of the airport that indicated that loss of the airport would mean immediate loss or relocation of jobs outside the District. Based on that analysis (as shown previously in **Figure 40**), **Figure 45** illustrates how the loss of a mere 20 jobs would ripple through the District totaling a loss of 32 jobs and approximately \$4.2 million in total spending.

Figure 45
Loss of Economic Activity from Businesses if No Airport

**Loss of Economic Activity
from Businesses in
Proximity to Airport that
would Relocate or Cease if
No Airport**

	Levels			Total
	Direct	Indirect	Induced	
Economic Activity				
Employment	20	7	5	32
Labor Income	\$661,742	\$304,774	\$232,636	\$1,199,152
Value-Added (GRP)	\$1,045,251	\$545,558	\$426,182	\$2,016,991
Output (Final Demand)	\$2,503,362	\$999,140	\$687,574	\$4,190,077

Source: Economic & Planning Systems

H:\63053-Truckee Tahoe CA Airport Economic Impact Study\Models\63053-Economic Impacts-081418 airport dependent business in proximity activity All Impact Detail.xlsx\TABLE 1- Summary

Airport Operations Activity

Using direct activity data from the airport, there are 29 full- and part-time jobs that support the operations of the airport, which total \$11 million in final demand for goods and services (i.e. total airport budget expenditures) in the District. This level of economic activity contributes just over \$4 million to the regional GRP, including more than \$3 million in labor income (it should be noted that this figure differs from the actual airport budget because of the input-output modeling labor income coefficients used to represent the industry activity). The airport’s direct economic activity supports indirect and induced activity throughout the District, bringing its total impact to \$19 million in final demand for goods and services and a total impact on the region’s GRP of nearly \$9 million.

Figure 46
Economic Activity from Airport Operations

Economic Activity from Airport Operations

	Levels			Total
	Direct	Indirect	Induced	
Economic Activity				
Employment	29	32	25	86
Labor Income	\$3,357,534	\$1,412,781	\$1,149,086	\$5,919,401
Value-Added (GRP)	\$4,201,846	\$2,521,624	\$2,105,042	\$8,828,513
Output (Final Demand)	\$11,251,567	\$4,659,563	\$3,396,143	\$19,307,273

Source: Economic & Planning Systems
 H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Models\163053-Economic Impacts-070918 airport operations activity All Impact Detail.xlsx\TABLE 1- Summary

Visitor Spending Activity

Using data from the Visitor Survey, it is estimated that total visitor spending on lodging, retail, food and beverage, and entertainment and recreation generates demand for 410 jobs to support a total of nearly \$32.3 million in direct spending per year. This level of activity generates approximately \$12.3 million in District labor income and contributes more than \$19.7 million to the GRP. This magnitude of direct activity spills over into the rest of the District’s economy, supporting a total of 558 jobs and more than \$53.8 million in annual spending.

Figure 47
Economic Activity from Visitor Spending

Total Economic Activity from Visitor Spending

	Levels			Total
	Direct	Indirect	Induced	
Economic Activity				
Employment	410	69	80	558
Labor Income	\$12,259,376	\$3,139,111	\$3,663,278	\$19,061,765
Value-Added (GRP)	\$19,742,933	\$6,309,478	\$6,711,345	\$32,763,756
Output (Final Demand)	\$32,269,550	\$10,689,192	\$10,827,633	\$53,786,376

Source: Economic & Planning Systems
 H:\163053-Truckee Tahoe CA Airport Economic Impact Study\Models\163053-Economic Impacts-081418 visitor spending activity All Impact Detail.xlsx\TABLE 1- Summary

Based on responses gauging visitor’s elasticity of demand, 30 percent of the visitor spending would be lost if the airport did not operate. The impact modeling estimates that approximately 121 direct jobs and a total of 165 jobs would be lost in the District, GRP would be reduced by nearly \$9.7 million and total spending would drop by approximately \$16.0 million. For the purposes of analysis, this estimate is considered the “conservative” estimate of economic activity lost if the airport did not operate.

Figure 48
Loss of Economic Activity from Visitor Spending if No Airport

Loss of Economic Activity from Visitor Spending Not Returning if No Airport

	Levels			Total
	Direct	Indirect	Induced	
Economic Activity				
Employment	121	20	24	165
Labor Income	\$3,635,728	\$933,404	\$1,087,000	\$5,656,132
Value-Added (GRP)	\$5,860,466	\$1,876,613	\$1,991,447	\$9,728,526
Output (Final Demand)	\$9,574,949	\$3,179,515	\$3,212,867	\$15,967,331

Source: Economic & Planning Systems
H:\153053- Truckee Tahoe CA Airport Economic Impact Study\Models\153053-Economic Impacts-081418 visitor spending very unlikely to return if no airport activity All Impact Detail.xlsx|TABLE 1- Summary

Multiplier Effects

It should be noted that in traditional economic impact analysis input-output modeling, one of the major underlying assumptions is that the direct spending dollars are “new” to the region. In this study, the collection of data from revenue passengers demonstrates the origin of this direct spending as entirely from outside the District economy. As such, it can be stated more confidently that the outputs of this analysis also would characterize the loss of economic activity to the District if the airport did not operate.

The direct multiplier effect of the airport is characterized as the ratio of dollars spent in the District economy to the direct dollars spent by the airport itself to operate. That is, without airport expenditures on operations, the net-new dollars spent by revenue passengers would not occur. As shown below in Error! Reference source not found., every one (1) dollar spent operating the airport yields an additional \$5.50 spent in the District economy (i.e. above the direct spending of the airport). It should be noted that this number does not include the estimated impact of taxable residential property valuation. It should also be noted the estimation of impacts related to dependent businesses in proximity to the airport are included in the estimates of indirect impacts.

**Figure 49
Spending Multiplier Effect**

Total Spending Multiplier Effects Attributable to the Airport

	Direct	Indirect	Induced	Total
Direct Multiplier Effect				
Airport Operations				
Employment	29	32	25	86
Labor Income	\$3,357,534	\$1,412,781	\$1,149,086	\$5,919,401
Value-Added (GRP)	\$4,201,846	\$2,521,624	\$2,105,042	\$8,828,513
Output (Final Demand)	\$11,251,567	\$4,659,563	\$3,396,143	\$19,307,273
Airport Visitor Spending				
Employment	410	69	80	558
Labor Income	\$12,259,376	\$3,139,111	\$3,663,278	\$19,061,765
Value-Added (GRP)	\$19,742,933	\$6,309,478	\$6,711,345	\$32,763,756
Output (Final Demand)	\$32,269,550	\$10,689,192	\$10,827,633	\$53,786,376
Total Spending Attributable to Airport				
Employment	439	100	105	644
Labor Income	\$15,616,910	\$4,551,893	\$4,812,363	\$24,981,166
Value-Added (GRP)	\$23,944,779	\$8,831,103	\$8,816,387	\$41,592,269
Output (Final Demand)	\$43,521,118	\$15,348,755	\$14,223,776	\$73,093,649
Multiplier Effect [1]	\$2.87 to 1	\$1.36 to 1	\$1.26 to 1	\$5.50 to 1

Source: Economic & Planning Systems

[Note 1]: Multiplier effect is calculated as the ratio of direct, indirect, and induced spending to direct airport operational spending.

C:\Users\dschwartz.EPSDEN\Desktop\163053\163053-Multiplier Effects.xlsx\TABLE 1 - Spending

Airport-Dependent Economic Activity

It is estimated that if the airport did not operate, the District would lose between 1.7 and 3.4 percent of its total economic activity. The analysis identifies a conservative and expected estimates of loss based on two interpretations of the elasticity of visitor spending. In both scenarios, the total impact of the airport’s operations would be a net loss to the District as would the loss of businesses in and around the airport that indicated they would either cease to operate or relocate outside the region. In the conservative estimate of loss (as shown in **Figure 50**), however, only the total economic activity attributable to visitor spending of those indicating they would be “very unlikely” to return to the area if the airport did not operate were used.

**Figure 50
Conservative Estimate of Economic Activity Lost**

Conservative Estimate of Loss in Economic Activity if No Airport

	Economic Activity			
	District	Loss	Net	Loss as %
Economic Activity				
Employment	17,486	251	17,235	1.4%
Labor Income	\$758,119,667	\$11,575,532	\$746,544,134	1.5%
Value-Added (GRP)	\$1,244,101,828	\$18,557,039	\$1,225,544,789	1.5%
Output (Final Demand)	\$2,120,915,454	\$35,274,605	\$2,085,640,849	1.7%

Source: Economic & Planning Systems

C:\Users\dschwartz.EPSDEN\Desktop\163053\163053-Loss of Airport Operations Impact-081418.xlsx\TABLE 2 - Conserv Loss Estimate

In the expected estimate of loss, shown below in **Figure 51**, the total economic activity associated with all visitor spending was used; assuming that the visitor spending is being completely facilitated by the use of the airport. In reality, just as some portions of visitors using the airport indicated that they would still be likely to return to the area even if the airport did not operate, it is unknown whether they would continue to return as frequently as they have.²⁰

Figure 51
Estimate of Economic Activity Lost

**Estimate of Loss in
Economic Activity if No
Airport**

	Economic Activity			
	District	Loss	Net	Loss as %
Economic Activity				
Employment	17,486	644	16,842	3.7%
Labor Income	\$758,119,667	\$24,981,166	\$733,138,501	3.3%
Value-Added (GRP)	\$1,244,101,828	\$41,592,269	\$1,202,509,559	3.3%
Output (Final Demand)	\$2,120,915,454	\$73,093,649	\$2,047,821,805	3.4%

Source: Economic & Planning Systems

C:\Users\dschwartz.EPSEN\Desktop\163053\163053-Loss of Airport Operations Impact-081418.xlsx|TABLE 4 - High Loss Estimate

²⁰ And while the Visitor Survey collected a tremendous amount of quantitative information, such a quantification would have required respondents to estimate an eventuality that would have been too hypothetical.

4. CASE STUDIES

Friedman Memorial Airport

Friedman Airport has been taking active steps to further integrate itself into the wider community, enhancing its communication initiatives while also developing strong partnerships with community organizations. Its approach to public relations has been to partner with local communications professionals.

Friedman Memorial Airport plays a significant role in the overall vitality of the Wood River Valley, which includes the resort communities of Sun Valley and Ketchum. These resort communities draw many visitors through the airport, whose early morning and late-night travel patterns are sometimes at odds with the residential communities closer to the airport. In general, noise complaints from these residents are lower in the winter as windows and doors in homes usually remain closed and greater in the summer when residents are more likely to have windows and doors open. The Airport Manager has put community engagement high on his priority list, realizing that being a part of the community has a major impact on how the overall community perceives the airport's role. In addition to regularly scheduled Airport Board meetings, which are open to the public, the airport also facilitates community outreach meetings to educate community members on new projects.

The airport's overall public relations strategy has been evolving, with an emphasis on improving and increasing communications with the community. Earlier this year, the Airport Board approved another 3-year partnership with a local PR and communications firm that has worked closely with the Airport Manager in developing an overall outreach strategy that will guide the airport's public relations efforts. Since the airport's external communication efforts are still evolving, it's difficult to distinguish which forms of external communication are most valuable, but according to the Airport Manager, the airport's fairly recent monthly newsletter has been well-received. The digital newsletter has a section for the Airport Manager to dive into greater detail about current issues and to respond to some of the potential confusion about the airport's happenings. The airport also makes good use of Facebook as a communications tool but acknowledges that it can take better advantage of other social media platforms.

In recent years, the airport has been proactive in forging new ways to invest in the community. For example, the airport has formed partnerships with community organizations, like sponsoring low-income youth to join the Sun Valley Ski Education Foundation. The airport is also planning a mentorship program with I Have a Dream Idaho to expose low-income youth to the airport and aviation. In another example, the airport tapped into the vibrant local arts community to establish the Sun Valley Airport Arts Commission, partnering with local artists and gallery owners. The Commission curates exhibits in the airport that showcase work by local artists, keeping the arts community engaged in the airport year-round.

Centennial Airport

Within 5 years, Centennial Airport has developed a strong multi-faceted approach to community engagement from the ground up. Its approach to public relations has been to hire and develop in-house staff to focus on these issues.

As one of the busiest general aviation airports in the country, Centennial Airport has good reason to maintain a robust community engagement practice and appears to have the administrative capacity to do so. Centennial Airport did not have a public relations strategy until the 2014 hiring of Deb Smith as its Public Information Officer, who claims that the airport now has an informal guideline that works from the premise of being as transparent as possible. The guiding PR principle is that the airport is going to listen and is going to participate.

Centennial facilitates community engagement in both conventional and innovative ways. In addition to maintaining an active website and producing a short newsletter, the airport operates accounts on four social media platforms—Twitter, Facebook, Instagram, and Periscope. Deb Smith has found shorter communication to be valuable. While she initially considered producing a longer publication with a more editorial feel, the newsletter approach allows more frequent distribution, keeping its contents to short descriptions of five key points while the newsletter's digital format provides the opportunity to link to more detailed information.

One of the more innovative aspects of Centennial's community engagement practice is the Centennial Airport Community Noise Roundtable. The Airport provides a \$10,000 annual budget to the Roundtable, which is comprised of representatives from each of the communities within the airport's noise shed and community members from various HOAs, as well as representatives from the FAA and the Pilots Association. The Roundtable meets once a month to discuss airport noise issues and has agency in how to spend its budget, which can be used for purposes such as education or attending conference on airport noise and noise abatement strategies.

Noise is a major issue for the airport, which operates a noise hotline as well as an online method of reporting noise complaints. One way in which the airport tries to proactively minimize noise complaints is by offering new homeowners information on how airport traffic or noise will affect their new home. The airport offers this free service upon request and can easily provide models and noise reports based on historical traffic patterns to potential homeowners so that they can make more informed decisions. Additionally, every time a home is sold within the airport's noise shed, the homebuyer must sign an agreement acknowledging that their home is within the noise shed. The airport also advises residents and businesses about what materials could assuage noise pollution, such as triple pane windows, and tries to encourage the real estate community to do the same with its clients.

East Hampton Airport

East Hampton Airport's approach to public relations has been to stay under the radar until significant issues or concerns arise. The Airport takes a rather hands-off approach to community engagement. The Airport does not participate in several forms of community engagement employed by some of the other airports discussed in this series of case studies, such as the production of a newsletter and the use of airport-specific social media accounts. However, a Noise Abatement Hotline is available to community members. The Airport operates as a department of the Town of East Hampton, and the Town Board hosts public hearings when significant issues and concerns arise. These public hearings are typically well-attended, with

community members affected by airport noise well-represented in the audience. The public hearings provide community members a forum to voice their concerns, while also presenting an opportunity for experts to discuss issues before the Town Board and greater community. Additionally, the Town Board hosts public meetings to introduce and discuss initiatives that the Town Board is undertaking.

The airport does not operate its own programming for community events and education but does offer up its facilities to an annual event called "Just Plane Fun Day." The event is hosted by the Airport Aviation Association, and while it is not a Town-sponsored event, it is held at the airport and serves as a type of unofficial open house to the airport.

Mammoth Yosemite Airport

Mammoth Yosemite Airport does not have a public relations approach. The Airport differs greatly from the other airports examined in this series of case studies. The Airport does not engage in community investment or engagement, and the Airport also rarely receives noise complaints due to airport operations. These two points may be a function of the Airport's physical separation from the nearby inhabited areas. Located between mountains, the airport's location is 8 miles east of the closest residential neighborhood in the resort community of Mammoth Lakes. Unlike the other airports studied, Mammoth Yosemite Airport remains in isolation, absent of the type of development that has encroached upon the boundaries of the other airports.

While the airport does not conduct active community investment or engagement activities, there is general community support for its expansion plans. Although mostly a general aviation airport, two airlines operate a few scheduled passenger flights at Mammoth Yosemite. As such, the airport also serves the next closest city, Bishop, 39 miles southeast of the Mammoth Yosemite. The Eastern Sierra Airport, 2 miles from Bishop, provides general aviation services, however Mammoth Yosemite Airport provides the schedule commercial passenger flight options closest to the city of Bishop.