

*The Economic Impact of the
Columbia Metropolitan Airport
A Statewide and Regional Analysis*



UNIVERSITY OF
SOUTH CAROLINA

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Prepared for the Columbia Metropolitan Airport (CAE)

Executive Summary

The Columbia Metropolitan Airport (CAE) is a significant generator of economic activity in South Carolina – and in the Midlands region in particular. Specifically, the CAE and its business tenants support a large workforce and a high volume of expenditure activity that generates considerable positive economic ripple effects across many industries statewide. In addition, the CAE induces further economic activity through attracting thousands of out-of-state visitors every year. These visitors spend part of their income on local goods and services, thereby increasing local demand.

The CAE also serves as a critically important competitive advantage for the ongoing economic development of the Midlands region. In general, there is a strong link between the health of any local economy and access to commercial aviation facilities. Airports provide a means to transport both people and goods regionally, nationally, and internationally as part of an increasingly global economy. By increasing the accessibility of a local region, commercial aviation facilities – and the CAE in particular - enable existing businesses to expand their reach and influence and provide additional opportunities for new businesses looking to expand and take advantage of local resources.

The purpose of this study is to specifically document the economic impact of the CAE on the Columbia Metropolitan Statistical Area (MSA) and on South Carolina as a whole. This will include estimates of all impacts resulting from the activities of the CAE business tenants as well as all out-of-state visitor spending that takes place as the result of visitor traffic that flows through the CAE. In addition, this study will provide estimates documenting the increases in state tax revenue that result from this total volume of economic activity. The key findings of this study are as follows:

- ***The total annual economic impact resulting from all business activities associated with the CAE and its tenants on the state of South Carolina is estimated to be approximately \$847 million.*** This figure reflects the dollar value of all final goods and services produced in South Carolina can than be attributed (either directly or indirectly) to CAE business tenants. This impact corresponds to 4,118 jobs and \$179 million in labor income for South Carolinians that would not exist otherwise.
- ***About 95 percent of this economic impact occurs within the Columbia MSA.*** This corresponds to approximately \$832 million in total economic output, 3,911 jobs, and \$170 million in labor income.

- *The CAE serves over one million passengers each year, over half of which are visitors to South Carolina. **These visitors increase local economic activity by spending money within the state at a variety of local businesses, which provides an additional \$364 million in economic activity to South Carolina.** This economic activity supports approximately 2,868 jobs and \$107 million in labor income.*
- ***The total economic impact that comes about through all activities associated with the CAE yields a statewide employment multiplier of 2.2.** For every 10 jobs that are directly supported by the CAE and its business tenants, an additional 12 jobs are created elsewhere in the South Carolina economy.*
- *The CAE contributes approximately \$1.2 billion to South Carolina's annual gross state product. **This implies that the CAE generates economic activity that produces approximately \$27 million in annual tax revenue for the state.***

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Section I – Introduction

The United States has the largest aviation system in the world with over 3,300 airports designated as part of the national airport system. It is comprised of approximately 2,800 general aviation and 540 commercial service airports, including the Columbia Metropolitan Airport (CAE).

Airports play a key role in transporting people and goods regionally, nationally, and internationally as part of the larger global economy. Airports also act as a vital linkage between many of the nation’s different transportation modes. While state and local governments typically own and operate most airports, the federal government also plays an important role in managing and regulating air traffic.

Airports not only have an essential role in the transportation of time-sensitive cargo, they are also significant generators of economic activity. Passenger activity has been shown to be a powerful predictor for population and employment growth even when controlling for other factors shaping economic growth.¹ This growth is usually concentrated in knowledge and service-based businesses rather than industrial manufacturing.²

In addition to on-airport activity and air transportation, airports also contribute to their local economies through visitor spending at off-airport locations. According to a 2012 national study from the Airports Council International, the nation’s nearly 500 commercial airports supported over 10.5 million jobs, created an annual payroll of \$365 billion, and produced an annual output of \$1.2 trillion.³

The CAE was founded in 1940 as the Lexington County Airport and was used by the U.S. military during World War II as the Columbia Army Airbase. The present

¹ Green, Richard K., “Airports and Economic Development.” *Real Estate Economics*, Vol. 35 (1), Spring 2007.

² Brueckner, Jan K., “Airline Traffic and Urban Economic Development.” *Urban Studies*, July 2003.

³ “The Economic Impacts of Commercial Airports in 2010,” published by the Airports Council International – North America, January 2012.

terminal was opened in 1965 with major renovations completed in 1997. The airport currently operates as a hub for United Parcel Services (UPS) Airlines in addition to traditional domestic passenger flights.

The airport covers about 2,600 acres and operates two runways. Annually, the airport serves over 1 million passengers and 168,000 tons of air cargo. Five airlines (Delta, Piedmont/US Airways, United Express, American Eagle, and Continental) account for the majority of passengers with Delta Airlines representing about 43 percent of all passengers in calendar year 2014.⁴

The purpose of this study is to specifically estimate the economic impact of the CAE on the three-county Columbia metropolitan region as well as on the state of South Carolina as a whole. This impact will be measured through estimates of job and income creation, the overall contribution to economic activity, and all state tax revenue that arises from all business activities associated directly with the CAE as well as all business tenants of the CAE. In addition, this study will examine the economic impacts associated with increases in visitor spending that can be directly attributed to the presence of the airport.

This study begins with a discussion of the economic impact methodology used, including a description of direct, indirect, and induced impacts. Section III then presents the statewide impact estimates of the CAE as well as the local estimates for the Columbia metropolitan region. Next, Section IV documents the annual tax revenue that accrues to the state of South Carolina as a result of all economic activities generated through the CAE. Finally, Section V concludes with a brief summary of all results.

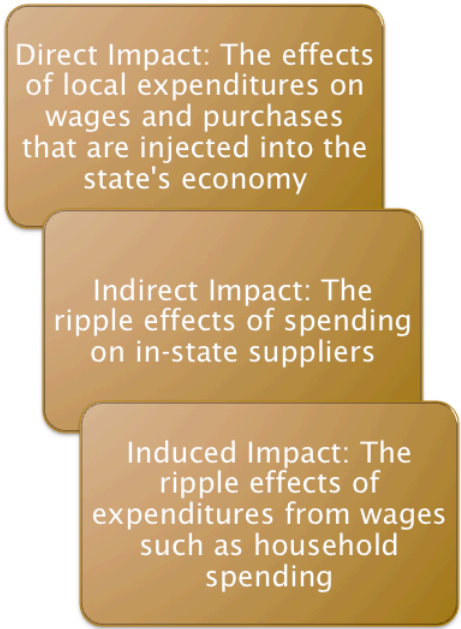
⁴ Source: <https://www.columbiaairport.com/>

Section II – Economic Impact Methodology

The economic impact of any organization or firm can be measured by how expenditures of that business or organization increase the demand for various goods and services in the local region over what it would have been otherwise. In a standard economic impact analysis, there are three types of economic impacts that can be identified: *direct*, *indirect*, and *induced* effects. The direct effect represents the initial change in economic activity. Thus, the direct impact of the CAE reflects all expenditures made by the airport Commission and the airport's tenants as part of their operations and provision of aviation services. This includes, for example, employee wages and benefits, computer equipment, building maintenance and operations, and other overhead and administrative costs.

The indirect effect reflects all of the additional economic impacts resulting from inter-industry linkages between other local businesses in South Carolina. For example, if the Richland-Lexington Airport District (RLAD) Commission were to hire a commercial builder to make renovations to the terminal, this builder would have to purchase – among other things – steel for the building. In this situation, local steel vendors would see an increase in demand, which would require them to purchase additional supplies from their vendors and to potentially hire additional employees if the increase in demand were large enough. The vendors of the steel suppliers would then see an increase in demand and have to purchase additional inputs as well, and so on. These indirect effects ripple through the economy and affect many sectors of South Carolina.

The induced effect reflects all of the additional economic impacts resulting from increases in the spending of household income. For example, when RLAD hires a



Direct Impact: The effects of local expenditures on wages and purchases that are injected into the state's economy

Indirect Impact: The ripple effects of spending on in-state suppliers

Induced Impact: The ripple effects of expenditures from wages such as household spending

commercial builder and the demand for this builder rises, some of the builder's staff will see a rise in their income levels. Part of this income will then be spent locally on, for example, food, entertainment, or housing. These industries will then also see an increase in demand for their goods and services, which will lead to higher income levels of some of their employees, part of which will also be spent locally. An increase in visitor spending that occurs as a result of the presence of the CAE also constitutes a separate set of induced impacts. Visitor spending activity is simply a form of household spending that occurs as a result of people traveling through South Carolina.

These successive rounds of indirect and induced spending do not go on forever, which is why a specific value can be calculated for each of them. In each round, money is "leaked out" for a variety of reasons. For example, employees will save some of their additional income and part of the money they do spend will go to businesses located outside of South Carolina. In order to determine the total economic impact, economic multipliers are used. An economic multiplier can be used to determine what the total economic impact is (direct, indirect, and induced) from an initial change in economic activity (the direct impact). For example, if \$1,000 was spent by RLAD on terminal renovation materials and this expenditure ultimately resulted in a total increase of \$1,500 in South Carolina economic activity, then the economic output multiplier would be 1.5. Multipliers are different in each sector of the economy and are largely determined by the size of the local supplier network. Multipliers also depend on the region being analyzed. For example, a \$1,000 purchase on terminal renovation materials would have a larger impact on South Carolina than on Richland County alone.

Multipliers are available to calculate more than just the indirect and induced impacts on overall economic activity. Multipliers also exist to determine the total impact in terms of employment and labor income. To estimate the impact of the CAE on the state of South Carolina, the Division of Research used a detailed structural model (known as an input-output model) of the South Carolina economy containing

specific information on economic linkages between different industries. This study also utilized the input-output modeling software *IMPLAN* in calculating estimates.

In order to capture data on direct business activity associated with all CAE tenants, a survey was distributed to each tenant requesting information on total annual operations revenue, payroll, and the number of full- and part-time workers employed. Data on the number of annual passengers to the airport was provided by the CAE to serve as the basis for estimating visitor traffic to South Carolina. The survey instrument used is displayed in Appendix I. All survey data were tabulated and the results – along with the visitor data provided by the CAE – are displayed in Table 1. All economic impact estimates presented in this report are driven by these data.

Table 1 – Total Annual CAE Direct Business Activity and Passenger Traffic

Annual Operations Revenue	\$533.6 million
Annual Payroll	\$79.6 million
FTE Employees⁵	1,871
Total Passengers in 2014	1,035,296

Section III – Economic Impact of the Columbia Metropolitan Airport

The structural input-output model estimates economic impacts in terms of three specific measures mentioned above: economic output, employment, and labor income. Economic output is simply defined as the dollar value of the final goods and services purchased that can be attributed (directly or indirectly) to the CAE and its associated business tenants. It can also be thought of as an aggregate measure of total spending resulting from an initial direct expenditure into the local economy.

⁵ FTE, or full-time equivalent, is a unit that represents the number of employees working full-time. Thus, one FTE is equal to one employee working full-time. FTE employees are used as the primary measure of employment in this report for ease of interpretation and so that firms with different numbers of full- and part-time employees can be directly compared.

Because it includes all spending by consumers and businesses on both goods and services, it is an all-inclusive measure of the impact on total economic activity. Employment reflects the number of jobs that are associated with the total economic output estimate and is measured in terms of the total number of full-time equivalent positions. Labor income represents total employee compensation, including wages, salaries, and benefits.

CAE Business Tenants

The total expenditures associated with all personnel and operations costs of the CAE business tenants represent approximately \$534 million in economic activity. In other words, the ongoing business activities of CAE tenants have an annual direct economic impact across the state of approximately \$534 million.⁶ This direct impact also leads to an economic multiplier effect, which is comprised of both indirect and induced impacts that arise through increases in demand for goods and services in other related local industries and through increases in household spending activity. Each impact is reported in Table 2, along with the accompanying totals. These totals represent *one of two major components* of the total impact of the CAE on the state of South Carolina.

Table 2 – Economic Impact of the CAE on South Carolina

	Employment	Labor Income	Economic Output
Direct Effect	1,871	\$79,610,006	\$533,645,772
Multiplier Effect	2,247	\$99,630,456	\$313,354,798

Total Effect	4,118	\$179,240,462	\$874,000,570

The approximately \$534 million in annual economic activity that is directly supported by the CAE business tenants leads to an additional \$313 million in

⁶ For each firm’s survey results, all data were matched to the appropriate North American Industrial Classification System (NAICS) code in which that firm currently operates.

economic multiplier effects. This is the result of increased demand for goods and services of local suppliers and additional household spending that results from the \$534 million in procurement activity by the CAE business tenants.

The combination of the direct and multiplier effect leads to a total impact of \$874 million on the state of South Carolina. This economic activity is associated with 4,118 jobs and \$179 million in labor income. The employment multiplier associated with these estimates is 2.2, implying that for every 10 jobs directly created by the CAE business tenants, an additional 12 jobs are created elsewhere in South Carolina.

Of the \$874 million in economic activity that is supported by the business tenants of the CAE statewide, the majority of that activity is concentrated within the Columbia MSA.⁷ Table 3 specifically highlights the economic impact of the CAE business tenants on the Midlands region. Notice, for example, that approximately 95 percent of the job creation supported by the CAE business tenants is concentrated in the Columbia MSA.

Table 3 – Economic Impact of the CAE on the Columbia MSA

	Employment	Labor Income	Economic Output
Direct Effect⁸	1,871	\$79,610,006	\$533,645,772
Multiplier Effect	2,040	\$90,140,186	\$298,696,012

Total Effect	3,911	\$169,750,192	\$832,341,784

The approximately \$534 million in annual economic activity that is directly supported by the CAE business tenants leads to an additional \$299 million in economic multiplier effects. Once again, this is the result of increased demand for

⁷ The Columbia metropolitan statistical area (MSA), also referred to as the Midlands region, is defined in this report to include Lexington, Richland, and Kershaw counties.

⁸ Note that the direct effect is the same for both South Carolina and the Columbia MSA (Tables 2 and 3) since the CAE business tenants are all located in the Midlands region.

goods and services of local suppliers and additional household spending that results from the \$534 million in procurement activity by the CAE business tenants.

Visitor Spending

The *second major component* of the total economic impact of the CAE on the state of South Carolina comes about from visitor spending activity. The CAE serves over one million passengers annually, and as Table 1 shows, served approximately 1,035,296 during the 2014 calendar year. A significant number of these passengers are visitors to South Carolina who spend time and money in the local economy. This spending activity introduces new demand to a variety of industries – from hotels and restaurants to transportation and recreational activities.

According to data from Wilbur Smith Associates and the U.S. Bureau of Economic Analysis (BEA), approximately 56.5 percent of total passengers to the CAE are visitors to South Carolina – each of which spends an average of \$649 while in the state.⁹ Combining these figures with the 2014 passenger data provided by the CAE yields the total impacts associated with South Carolina visitors who traveled to the state utilizing the CAE. These estimates are summarized in Table 4. Note that these impacts all represent an *induced* effect. In other words, these impacts come about from increases in household spending activity within South Carolina’s economy.

Table 4 – Economic Impact of CAE Visitor Spending on South Carolina

Employment	Labor Income	Economic Output
2,868	\$107,244,971	\$364,295,237

The total annual economic impact on South Carolina arising from all spending activity on the part of visitors to the state who travel to and from South Carolina using the CAE is approximately \$364 million. This dollar value is associated with roughly 2,868 jobs and \$107 million in labor income.

⁹ Source: *The Economic Impact of Aviation in South Carolina*; prepared by Wilbur Smith Associates, Inc. – May 2006

As is the case with the economic impact activity associated with the CAE business tenants, the majority of the impact arising from visitor activity is also concentrated within the Columbia MSA. Table 5 highlights the economic impact of all CAE-related visitor spending on the Midlands region. Notice, for example, that approximately 92 percent of the job creation supported by visitor spending is concentrated in the Columbia MSA.

Table 5 – Economic Impact of CAE Visitor Spending on the Columbia MSA

Employment	Labor Income	Economic Output
2,636	\$98,583,482	\$334,873,449

The total annual economic impact on the Columbia MSA arising from all spending activity on the part of visitors to the state who travel to and from South Carolina using the CAE is approximately \$335 million. This dollar value is associated with roughly 2,636 jobs and \$99 million in labor income.

Total Impact

Combining the impact of the CAE business tenants and visitor spending yields the total economic impact of the CAE on the state of South Carolina, which Figures 1-3 highlight.

Figure 1 – Total Economic Impact of the CAE on South Carolina (Employment)

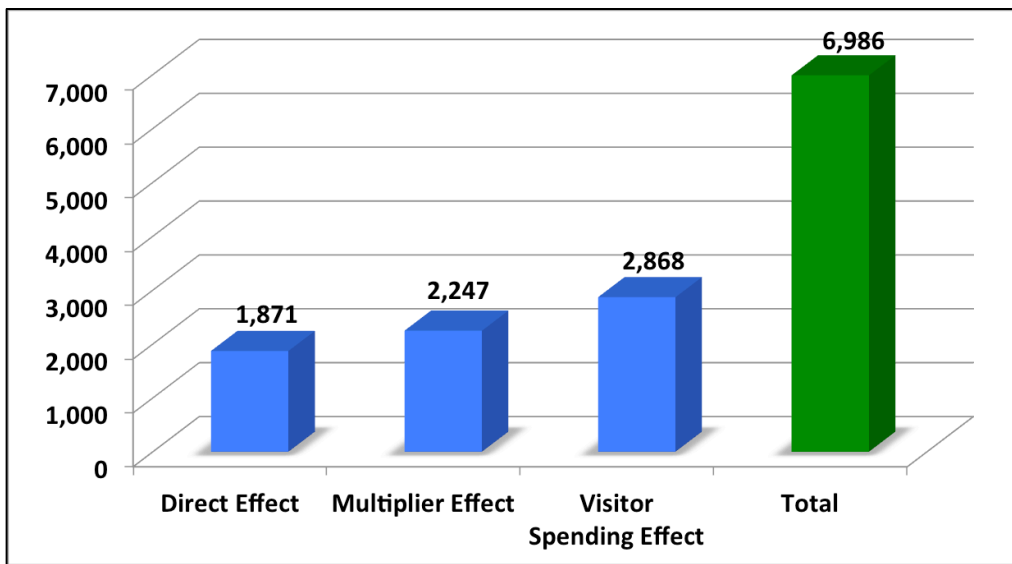


Figure 2 – Total Economic Impact of the CAE on South Carolina (Economic Output)

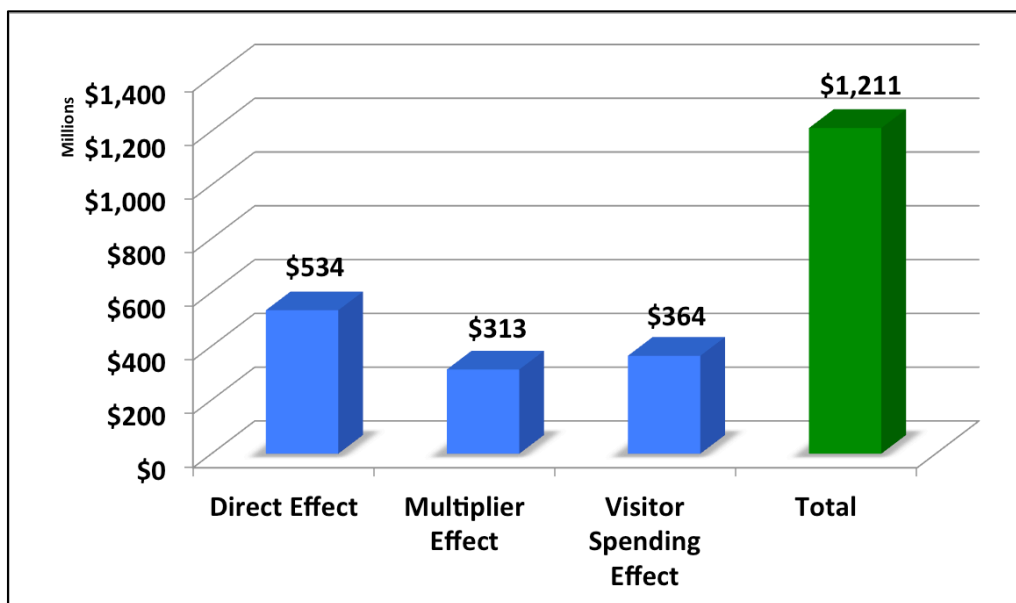
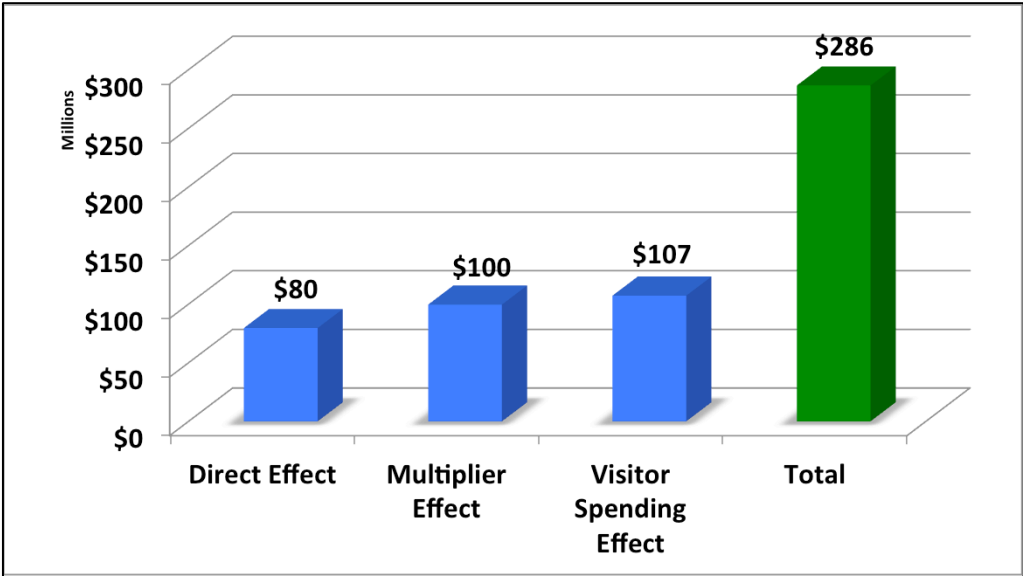


Figure 3 – Total Economic Impact of the CAE on South Carolina (Labor Income)



In sum, the annual economic impact of the CAE on the state of South Carolina totals approximately \$1.2 billion in economic output, 6,986 jobs, and \$286 million in labor income for South Carolinians. About 95 percent of this total impact is concentrated within the Columbia MSA.

Section IV – Contributions to State Tax Revenue

Another major impact of the CAE comes from the increase in state tax revenue that results from the economic activity it supports. As summarized in Figures 1-3, the economic impact of the CAE that arises from all associated business tenants and local visitor spending totals approximately \$1.2 billion annually.

Historically, every additional dollar that is generated in economic activity (i.e., nominal gross state product) within South Carolina also generates 5.1 cents in new state tax revenue.¹⁰ By applying this figure to the economic activity generated by the CAE, the tax revenue from this total volume of activity can be estimated.¹¹ Table 6 displays these results, which show that the annual total estimated tax revenue that arises from the CAE is approximately \$27.2 million.

Table 6 – State Tax Revenue Derived from the CAE

Category	Dollar Value
Estimated Economic Output for South Carolina	\$1,211,295,807
Estimated Tax Revenue Generated for South Carolina	\$27,175,542

Section V – Conclusion

One of the most important competitive advantages a local region can have that will aid its long-term economic growth is access to a commercial aviation facility. There are strong links between the health of local economies and access to airports. For example, an increase in passenger activity is a significant predictor of population and employment growth even after controlling for most other factors that drive economic development. By increasing the accessibility of a local region, airport

¹⁰ The historical relationship between South Carolina nominal gross state product and the South Carolina general funds revenue (as measured and tracked by the South Carolina Board of Economic Advisors) was estimated by the Division of Research using industry-standard time-series regression techniques.

¹¹ Economic output represents the value of industry production and is therefore not synonymous with gross state product. As such, the dollar value of all intermediate inputs was subtracted from economic output before the 5.1-cent estimate was applied to estimate total tax revenue.

facilities enable business to expand their reach and influence and provide opportunities for new businesses looking to expand and take advantage of local resources.

This study documents the total statewide economic impact of the Columbia Metropolitan Airport (CAE), which includes the impacts of all CAE business tenants as well as the visitor spending activity that occurs as the result of the passenger traffic that the CAE facilitates. In sum, this study estimates that the total economic impact resulting from both of these sets of activities is approximately \$1.2 billion on the state of South Carolina. This dollar value represents all final goods and services produced in South Carolina that can be attributed (directly or indirectly) to the CAE. This impact corresponds to 6,986 jobs and \$286 million in labor income for South Carolinians that would not exist otherwise. Of this \$1.2 billion, approximately 95 percent is concentrated within the Midlands region. This \$1.2 billion also generates approximately \$27 million in new tax revenue for the state of South Carolina.

The economic benefits of the CAE are clear. The business activities supported by the CAE not only supports a large workforce and a high volume of expenditure activity that generates considerable positive economic ripple effects across many industries, but also serves out-of-state visitors who then introduce new spending activity to the state and thus further stimulates local industries.

South Carolina's economy has become much more globally based since the Great Recession, with economic growth being largely driven by export-oriented industries such as automotive and aerospace. As the state continues to enhance its reputation and presence on the international stage, the importance of commercial aviation facilities will only increase going forward and serve a critical function in facilitating economic development efforts across South Carolina for the foreseeable future.

Appendix I



Please complete the following table:

Business Name	
Business Industry Description (please be specific)	
Total Annual Operations Revenue (in dollars)	
Total Annual Payroll (in dollars)	
Total Number of Current Full-Time Employees	
Total Number of Current Part-Time Employees	
How many hours per week does your average part-time employee work?	

**Note that all data will be kept confidential.*

Please send the completed survey and any questions regarding this survey to:

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