

# **Aircraft Chartering Service Analysis**



**SC Budget and Control Board  
Office of the Executive Director**

*Issued in accordance with Proviso 117.130 of the  
FY 2013-14 Appropriations Act (H.3710)*

## **I. Introduction**

Proviso 117.130 of the state budget for fiscal year 2013-2014 directs the Budget and Control Board to analyze the cost and benefits of selling the two state owned aircraft presently operated by the South Carolina Division of Aeronautics and authorizing use of private airline charters for official state business. Specifically, the proviso provides:

**117.130.** (GP: Aircraft Chartering Services Analysis) The Budget and Control Board is directed to conduct an analysis to determine the costs and benefits of selling the following state-owned aircraft operated by the Division of Aeronautics: Hawker Beechcraft King Air 350 and Hawker Beechcraft King Air C90; and authorizing private chartering services for use by state officials and state agencies to conduct the state's official business. This analysis must be presented to the Governor and General Assembly no later than January 1, 2014. The Budget and Control Board shall have the authority to sell the state-owned aircraft if the cost-benefit analysis justifies the sale.

This analysis is contained in the pages that follow. The core of the analysis is a comparison of the cost effectiveness of aircraft ownership and charter service. This analysis is conducted by comparing the Division's cost for five common trips to the cost of the same trips if flown by charter services. Specific trips are used for analysis because no other approach produces a sufficiently fair "apples-to-apples" comparison. Comparison by hourly rate is inexact because charter airlines typically add several trip specific charges to their hourly rates. Landing fees, fuel cost above a base rate and additional crew are examples of trip costs added by charters. The trips used for comparison are typical of the more frequent trips made by state officials and employees during FY 2012 and FY2013, with certain exclusions consistent with a new FY 2014 budget proviso prohibiting flights on the state planes for athletic recruiting.

Because the proviso specifies a comparison between state-ownership of aircraft and a business charter, the analysis does not include an analysis of other ways of providing air transportation, such as fractional aircraft ownership or commercial flights. In addition, combinations of ownership and leasing are not analyzed because the proviso specifically required an evaluation involving a sale of the state-owned aircraft. The analysis also does not quantify the benefit or cost of a particular decision as it may affect the purposes for which the aircraft are used or the effectiveness and efficiency of flying as a mode of transportation. These are beyond exact, meaningful measurement, and most must be weighed by those charged with making public policy. Finally, the analysis does not add or subtract value for such factors as safety records or aircraft availability, and it does not estimate the monetary cost or benefit of subsequent actions that could arise out of and as a by-product of the decision to own or charter.

## **II. Overview of Aeronautics Commission and Division**

The Aeronautics Division is a separate and distinct component of the South Carolina Budget and Control Board. The Division is governed and overseen by the Aeronautics Commission which is

composed of one member from each congressional district, elected by the legislative delegation of the district, and one member from the state at large, appointed by the Governor upon the advice and consent of the Senate. On a day to day basis, the Division is administered by an executive director, who serves at the pleasure of the Commission. The executive director, who must satisfy the same minimum qualifications as the members of the Commission, is nominated by the Commission and appointed by the Governor. Minimum qualifications for the Commission and executive director require experience or involvement with aviation or legal experience.

The Budget and Control Board is charged with providing administrative support for the Aeronautics Division. Purchases or sales of any aeronautics assets must be approved by the Aeronautics Commission. In addition, if the purchase or sale involves an aeronautics asset with a value in excess of fifty thousand dollars, the Joint Bond Review Committee must review the purchase or sale before approval by the Aeronautics Commission. However, for FY 2013-2014, the Budget and Control Board is authorized to sell the Division's two aircraft if justified by this analysis.

The Division consists of two departments that reflect the Division's missions. The two departments include a flight department, which is charged with providing safe air transportation for state agency employees, legislators, and constitutional officers, and an airport development department, which fosters air commerce by overseeing the safety and development of the state's public use airports.

The flight department is discussed more fully in the following section, and legal authorities relevant to the establishment, organizational structure, governance, administration and missions of the Commission and Division are reported and many replicated in Appendix A.

### **III. Background on Flight Department**

The Aeronautics Division operates and maintains two aircraft for conduct of official business by the Governor, Constitutional Officers, General Assembly, state agencies and political subdivisions. The two aircraft are a 1983 King Air C90 and 1990 King Air 350. Both are two engine, turbine powered propeller jets (turboprops) manufactured by the Beech Aircraft Corporation, now a division of Hawker Beechcraft. The King Air C90 is a small, six passenger aircraft and the King Air 350 is a medium size aircraft with seating for up to nine passengers. The manufacturer's recommended cruise speed is 250 miles an hour for the King Air C90 and 357 miles per hour for the King Air 350. Carrying four passengers, the aircraft have a range of approximately 1,656 and 966 statute miles, respectively (statute mile is equivalent to mile).

The King Air 350 requires two pilots for all flights with passengers. The King Air C90 requires only one, but is flown with two upon request and, as a matter of Division practice, when transporting the Governor. The Aeronautics Division employs a Chief Pilot as a salaried full-time permanent employee and 5 part-time pilots as temporary employees paid on a daily rate

when needed. According to the Division, the Division requires its pilots to meet requirements in excess of those mandated by the Federal Aviation Administration. The Aeronautics Division reports that its pilots must possess an FAA commercial pilot certificate with multi-engine land and instrument rating and have a minimum of 4,000 hours for a captain on the King Air 350 and a minimum of 2,500 hour for a captain on the King Air C90. The FAA requires charter operator pilots to have only 1,200 hours for captain in the King Air 350, and there is no minimum pilot hour requirement for the King Air C90. The total flight time logged by the Division's full and part-time pilots ranges from 4,212 to 12,300 hours. The chief pilot has a total of 6,500 hours flight time, 16 years flying experience, and an Airline Transport Pilot rating, which is also an FAA requirement for Aeronautics flights or charter operators. The FAA requires each pilot serving as a flight captain to participate in training at an FAA approved facility every two years, but the Division sends its Chief pilot and one part-time pilot once a year.

Division aircraft are reserved on a first come-first served basis and available any day of the year, including holidays. According to the Division, requests are most often received days and weeks in advance, sometimes one day in advance and occasionally the same day as the requested flight. Although advance planning is preferable, the Division indicates it can be airborne within an hour of a request. With two aircraft, the Division reports that it has been unable to accommodate requests for flights only on rare occasions. Previously, when the Division had one aircraft, the King Air 350, it was common for the airplane to be unavailable.

The Chief Pilot assigns the particular aircraft to be used for a flight, giving consideration to, among other things, plane availability, number of passengers, trip distance, the most efficient aircraft for the flight, the destination's available landing and take-off distance, and the user's request.

Presently, Aeronautics Commission policy is to provide flight service to the Governor's Office, Legislative Branch, and Constitutional Officers at no charge. An annual general fund appropriation is considered to provide support for use of the aircraft by these entities. All other agencies are charged at a fixed rate that is calculated annually using a formula designed to generate revenue equal to the prior year's variable cost to operate the planes. Variable operational costs are costs that vary depending on how much the aircraft are used. In the Division's calculation, variable cost elements are actual expenditures for: (i) salary and fringe for temporary pilots called in when permanent pilots are unavailable or a second-in-command is needed, (ii) crew travel expenses such as meals and lodging, (iii) airplane parts provided in-house, (iv) fuel, (v) oil, (vi) airport fees, and (vii) outside maintenance. Fixed costs are the annual costs of owning, maintaining and administering the aircraft regardless of how often an aircraft flies. For purposes of calculating the hourly rate the Division categorizes expenditures such as the following as fixed and excludes them as cost elements: (i) salaries and fringe paid to pilots who are permanent employees, (ii) hangar rental, (iii) insurance, (iv) scheduled maintenance and (v) inspections. For FY 2013, the hourly rate for the two airplanes, based on

the variable operational cost, was \$850 an hour for the King Air C90 and \$1,250 an hour for the King Air 350. Rates apply to flight time, which is from lift off to touch down.

Division aircraft are maintained as much as possible by its mechanics at the Division's maintenance facilities on the Columbia Metropolitan Airport Campus. In-house maintenance is provided by a Chief of Aircraft Maintenance, who is a full-time permanent employee and an Aircraft Maintenance and Ground Support Specialist, who is a full-time temporary employee. The Chief of Maintenance possesses FAA mechanic certifications with both an Airframe and Powerplant rating (A&P) and holds an Inspection Authorization (IA). The Airframe and Powerplant ratings allow the Chief of Maintenance to perform major repairs and aircraft alterations. The Inspection Authorization (IA certificate) permits him to determine the airworthiness of an aircraft following a major repair or alteration or performance of an annual or progressive inspection. The Chief of Maintenance is also a certified Beechcraft Master Mechanic and receives training on an annual basis to maintain his certification. When outside maintenance and inspections are required, a Beechcraft service center is utilized.

In addition to the Division's aircraft, Division mechanics maintain three Department of Natural Resources piston engine aircraft housed in the Division's hangars on the campus of the Columbia Metropolitan Airport. The Civil Air Patrol and SLED also use the Division for maintenance on occasion. The Division charges these agencies for the cost of parts and \$55 an hour for labor. The Division reports that its \$55 hourly rate is lower than the rate DNR would pay in the marketplace. The Division is also able to secure and sell parts to DNR at or below-market prices.

The Division controls two aircraft hangars under a long-term ground lease with the Richland-Lexington Airport Commission. The Wilder Office/Hangar is located at 2553 Airport Boulevard and is 14,021 square feet. This hangar houses the Division's King Air C90 and King Air 350 aircraft and its maintenance department. The second hangar, called the Quonset Hangar, is a 22,000 square foot facility and the oldest hangar at the Columbia Metropolitan Airport grounds. It was built in the 1940's and has a clear-span arched roof. The Quonset Hangar is located on the Division's property, but is separate from the Division's main building. The Division incurs an annual lease payment of \$73,611, from the Richland-Lexington Airport Commission, which is offset by sub-leasing office and hangar space to the South Carolina Army National Guard for \$65,412.

As authorized by budget proviso, the Division leases space in the Quonset Hangar to the Army National Guard for its large turboprop airliner and, as noted previously, to the Department of Natural Resources for its three piston aircraft.

The Division of Aeronautics owns and manages seven in-ground fuel tanks that service its aircraft and provides fuel for sale to other state agencies. The fuel tanks are located at its facilities on the Columbia Metropolitan Airport Campus. The Jet fuel tanks consist of three

20,000 gallon fuel tanks and one 2,000 gallon tank for waste fuel. One of the 20,000 gallon tanks is inactive. The Aviation Gas fuel tanks consists of two 10,000 gallon fuel tanks and one 2,000 waste tank.

The Department of Natural Resources is the Division's primary customer for fuel sales, but SLED and the Civil Air Patrol also purchased fuel from the Division during FY 2012 and FY 2013. The Aeronautics Division sold these agencies 4,983 gallons in FY 2012 and 5,259 in FY 2013 at or below market prices. The Aeronautics Division is able to offer fuel at the reduced price because it monitors its tank levels and wholesale fuel prices to keep its tanks supplied with fuel at the most advantageous price. Aeronautics then passes the savings on to other agencies by only marking up the wholesale price about \$.50 a gallon to cover costs of its equipment and line and pumping service personnel.

In addition to its more familiar mission, the division is a member of the emergency management division's air branch, which provides air support in disasters and emergencies. The division, along with other state agency flight departments' assets and personnel, are pre-assigned roles and responsibilities according to an operational plan.

The Division is also authorized to enter agreements with public hospitals and medical centers owned, operated, or supported in whole or in part by state funds for the purpose of transporting personnel or patients. The Division has a long standing reciprocating relationship with MUSC and has provided flights in the past on an as-needed basis.

The Division's flight department is usually supported by five sources of income, with hangar rent used for this purpose on occasion. The usual five sources are as follows:

a. general fund appropriation—The Aeronautics Division is one budgeted program, aggregating funding for the flight department, airport planning and development and administration. The Division expended \$176,748 of its general fund appropriation for the flight department in FY 2012 and \$368,062 in FY 2013. Through November 30, 2013, the Division has expended \$193,876 of its general fund appropriation for the flight department.

b. passenger revenue—As previously noted, the Division charges some state agencies for flights at a rate designed to cover certain variable flight costs. The Division collected \$98,195 from passenger revenue in FY 2012 and \$170,390 in FY 2013. Through November 30, 2013, the Division has received \$40,280 in passenger revenue.

c. aircraft maintenance revenue—The Division generated \$60,303 for the flight department from sales of maintenance services to other agencies during FY 2012 and \$98,909 in FY 2013. Through November 30, 2013, sales had generated \$24,976. Figures are gross revenue before subtraction of any operating expenses, such as cost of labor, supplies and parts.

d. aircraft fuel revenue— The Division produced \$22,423 for the flight department from sales of fuel to other agencies in FY 2013 and \$23,665 in FY 2013. Through November 30, 2013, the Division has sold \$11,646 in fuel. Figures are gross revenue before subtraction of any operating expenses, such as cost of fuel and labor.

e. State Aviation Fund—Since FY 2013, the Division has been authorized to use an allocation from the State Aviation Fund for the maintenance and repair of the Division's aircraft. The Fund consists of revenue from airport and other aeronautical licensing fees, taxes on aviation fuel and appropriations for aviation grants. During FY 2013, \$192,065 was allocated from the State Aviation Fund for maintenance and repair of Division aircraft. Through November 30, 2013, the Division has expended \$127,305 from the Fund for aircraft maintenance.

#### **IV. Present Use of Airplanes**

##### Source and Methodology

Analysis of the use of the two aircraft owned and operated by the state of South Carolina was conducted using flight data from the two most recently completed fiscal years, FY 2011-2012 (FY2012) and FY 2012-2013 (FY2013). Elements of flight data collected for each plane include flight dates, authorizing party, flight purpose, number of flight legs, airport and county of origination, airport and county of destination, actual flight time en route, statute miles per flight leg, and number of passengers per flight leg. All data elements used in the analysis of aircraft usage were gathered from flight logs and manifests provided by the Division of Aeronautics, which are also available on the division's website for viewing by the general public.

##### Aircraft Use – FY2012 and FY2013

###### *Trips*

During FY2012 and FY2013, the state operated two airplanes, a Hawker Beechcraft King Air 350 and a Hawker Beechcraft King Air C90, which provided air transportation to officials and agencies for approximately 200 state business trips. Over the two years, the number of trips were nearly equally divided between the two aircraft. The King Air C90 flew 99 trips and the King Air 350 flew 103. For the purpose of this analysis, a trip is defined as a flight originating from and returning to Columbia, where the planes are stationed.

Approximately 55% of the trips were to in-state destinations, with Clemson, Columbia, and Charleston being the most frequent destinations for both the King Air C90 and the King Air 350. Other common in-state destinations include Myrtle Beach, Sumter, Greenville/Spartanburg, and Hilton Head. The King Air 350 was the airplane used most often for trips out of state, making 58 or 63.7% of those flights. The most frequent out-of state destinations for the King Air 350 were Manassas, Virginia; Teterboro, New Jersey; Orlando, Florida; and Atlanta, Georgia. For the

King Air C90, the most frequent out-of-state destinations were Manassas, Virginia; Raleigh, North Carolina; and Atlanta, Georgia.

The number of round trips in-state and out-of-state by fiscal year and aircraft are reported in the tables found in Appendix B. For round trips with multiple stops, the trip is considered out-of-state if the destination of at least one flight leg is outside the state of South Carolina.

### *Flight Legs*

All flights that are not one-way consist of legs, which are the segments between take-offs and landings. For the approximately 200 trips conducted by the state's King Air 350 and King Air C90, the number of legs per trip ranged from two to eleven, with the majority of trips having between two and four legs.

Both planes are based in Columbia and must occasionally be positioned for passengers. This means the planes may not have passengers for some legs of a multi-stop trip. These "empty legs" generally occur when passengers begin and conclude their trip from a location other than Columbia. The state plane flies empty to pick up the passengers and empty when it returns to Columbia after dropping off its passengers at their original point of departure.

Over the past two fiscal years, about 29% of the legs of a trip were empty, while approximately 71% carried passengers. Excluding maintenance and training flights, the King Air 350 flew 30 empty legs in FY2012 and 43 in FY2013. The King Air C90 flew 40 in FY2012 and 52 in FY2013. The average empty leg was 34 minutes and 149.2 statute miles. The most frequent empty leg flights were between Columbia and Clemson and Columbia and Charleston.

### *Flight Hours and Statute Miles*

Together, both planes flew a total of 50,652 statute miles during FY2012 and 77,289 miles during FY 2013. The King Air 350 flew 60% of the statute miles in FY2012 (30,400 statute miles) and 60.9% in FY2013 (47,130 statute miles). The King Air C90 flew the remaining 40% (20,252 statute miles) in FY2012 and 39.1% (30,159 statute miles) in FY2013. The number and percentage of flight hours for each plane generally paralleled the statute miles. The King Air 350 logged around 56% of the flight hours both years. Specifically, the King Air 350 flew 100.9 hours in FY2012 and 160.2 in FY2013 for a total of 261.1 hours over both years, and the King Air C90 flew 82.4 hours in FY2012 and 123.1 hours in FY2013 for a total of 205.5 hours over both years. Statute miles and flight hours for each plane and fiscal year are reported in the tables found in Appendix C.

### *Aircraft Use by Authorizing Party*

During FY2012 and FY2013, the state's two aircraft were used by various entities to conduct state business. Users include the Governor's Office, institutions of higher education,



constitutional officers, members of the General Assembly, state agency personnel, and Division of Aeronautics staff.

Aircraft use was determined by the percentage of hours flown by each authorizing party on both airplanes during a fiscal year. In both FY2012 and FY2013, 42% of the total flight hours (76.8 hours in FY2012 and 117.9 hours in FY2013) were authorized by institutions of higher education. In FY2012, Clemson University was the only institution of higher education to use the state aircraft. Clemson University, Coastal Carolina University, and the Medical University of South Carolina all utilized the aircraft in FY2013.

The remaining use of state aircraft in FY2012 was distributed as follows: 23% (42.7 hours) authorized by members of the General Assembly (House of Representatives and Senate); 15% (27.8 hours) authorized by state agencies, including the SC Department of Commerce, SC Ports Authority, and SC Department of Agriculture; 11% (19.6 hours) authorized by the Governor's Office; 8% authorized by the Division of Aeronautics; and 1% (1.5 hours) authorized by a constitutional officer, the State Treasurer.

The remaining use of state aircraft in FY2013 was distributed as follows: 22% (63.1 hours) authorized by the General Assembly; 17% (47.5 hours) authorized by state agencies, including the SC Department of Commerce and the SC Ports Authority; 12% (35.1 hours) authorized by the Governor's Office; 4% authorized by constitutional officers, including the State Treasurer and Attorney General; and 3% (7.6 hours) authorized by the Division of Aeronautics.

Flight hours authorized by the Division of Aeronautics in both fiscal years include all aircraft maintenance and training flights. Aircraft use information by authorizing party for both FY2012 and FY 2013 is reported in the pie charts found in Appendix D.

#### Proviso 117.120 – Athletic Recruiting Restriction

Proviso 117.120, added to the General Appropriation Act in fiscal year 2013-2014 and effective July 1, 2013, prohibits institutions of higher learning from using state aircraft operated by the Division of Aeronautics for athletic recruiting. Flight information from FY2012 and FY2013 was adjusted to exclude flights categorized as "Athletic" and reevaluated in order to anticipate the effect this proviso might have on the use of Division aircraft in the current and subsequent fiscal years.

Excluding flights categorized as "Athletic" in nature, both planes flew 174 trips during fiscal years 2012 and 2013 with the King Air C90 flying 85 trips and the King Air 350 flying 89 trips. Both planes together flew a total of 98,507 statute miles in FY2012 and FY2013, approximately 29,000 statute miles less than the total including athletic flights. Exclusion of athletic flights results in a drop in miles flown per fiscal year for both planes, from 50,652 statute miles to 36,821 statute miles during FY2012, a 27.3% decrease, and from 77,289 statute miles to 61,686 miles during FY 2013, a 20.2% decrease. Flight hours for both planes per fiscal year also

decreased, dropping from 183.3 hours to 136.2 hours in FY2012 and from 283.3 hours to 227.6 hours in FY2013. This resulted in a 22% decrease in total hours flown by both planes over both fiscal years. Round trips, statute miles, and flight hours excluding athletic flights for each plane and fiscal year are reported in the tables found in Appendix E.

## **V. Methodology for Determining Cost and Cost Effectiveness of Alternatives**

The method by which the Budget and Control Board determined the relative cost of air transportation provided by the Division of Aeronautics and charter operators is explained in the subsections below. In short, the Budget and Control Board calculated cost for the Division of Aeronautics based upon actual expenditures and flight hours for the past two complete fiscal years. This calculation was then used to determine the cost of the Division to provide five of its more common trips. The Division's trip cost is compared to pricing for the same five trips as reported by South Carolina and Georgia charter operators responding to a written Request for Information from the Board. The results of this comparison are reported in Section VI of this analysis.

### **Cost of Current Flight Operations**

The Budget and Control Board's cost analysis was conducted using data compiled from the two most recently completed fiscal years; Fiscal Year 2011-12 and Fiscal Year 2012-13. The goal of the Board's analysis was to obtain an understanding of expenses incurred by the Aeronautics Division for activities associated with maintaining and operating its aircraft, as well as segregate those expenses based on the behavior of the expenses. In addition to analyzing actual data, the Board evaluated benchmark data for each aircraft prepared by Conklin & de Decker, an industry leader in providing aviation information to make informed decisions.

### **Variable Costs**

Variable costs refer to those costs that change in total in proportion to flight hours.

#### ***Aviation Fuel***

Aviation Fuel is a product of the gallons consumed per flight hour (fuel burn) and the average fuel cost per gallon. The Division of Aeronautics estimates the fuel burn rate at 126 gallons per hour for the King Air 350 and 75 gallons per hour for the King Air C90. The estimated fuel burn provided by Aeronautics is comparable to estimates provided by Conklin & de Decker, which estimated fuel burn rates of 136 gallons per hour and 78 gallons per hour for the King Air 350 and King Air C90 respectively.

The cost per gallon of fuel was estimated at \$4.00 per gallon for our cost analysis. The cost per gallon was estimated through an analysis of fuel purchases occurring from June 2012 to June 2013. Aeronautics achieves greater cost savings when purchasing fuel in bulk to replenish their fuel inventory, and purchased 22,305 gallons of jet fuel in June 2012 at a total cost per gallon of

\$3.09 including taxes. When averaged with jet fuel purchases throughout the year during trips, Aeronautics paid an average of approximately \$3.84 per gallon.

### *Engine Reserves*

Engine reserves are estimated to cover the cost of an overhaul of the engine at the recommended Time Between Overhaul (TBO). The engine reserve rate for the King Air 350 is based on the Division's existing service plan with Pratt and Whitney for overhauling both engines. The Division does not have a service plan to overhaul the King Air C90 engines since transferring the plane from the Medical University of South Carolina during fiscal year 2012. The engine reserve calculated for the King Air C90 was obtained from a study conducted by Conklin and de Decker in which the overhaul cost was estimated at \$552,200 for the two PT6A-21 engines. The recommended time between overhaul for the King Air C90 is 3600 hours, resulting in an hourly rate of \$153.33.

### *Maintenance Supplies and Services*

Maintenance supplies and services include expenditures by the Division for aircraft parts and supplies used by the Division's maintenance staff as well as maintenance services performed by external service centers in repairing or maintaining the Division's aircraft. These expenditures do not include salaried maintenance personnel who are captured under fixed costs. Because Aeronautics also incurs expenditures for supplies and services performing maintenance and repair work on other Agencies' aircraft (Department of Natural Resources, SLED, Civil Air Patrol), these costs were excluded from the Board's calculation.

Prior to fiscal year 2013-14, Aeronautics did not capture maintenance expenditure data by airplane. To determine the average maintenance costs applicable to each airplane, we developed an allocation to assign those costs based on the relative fair market value of each airplane. Table 1 below outlines of the allocation methodology used to calculate maintenance costs for each airplane.

***Table 1***

	<b><u>FY 2011- 12</u></b>	<b><u>FY 2012- 13</u></b>	<b><u>Total</u></b>
Total Maintenance Supplies and Services	196,678	205,742	402,420
<b>Less:</b>			
Engine Reserve Payments	(22,342)	(32,342)	(54,685)
Reimbursable Parts and Services	(30,810)	(68,425)	(99,235)
Uncommon Maintenance Expenditures <sup>(1)</sup>	(18,401)		(18,401)
<b>Net Maintenance Costs</b>	<b>125,124</b>	<b>104,975</b>	<b>230,099</b>
Allocation of Net Maintenance Costs <sup>(2)</sup> :			
King Air 350 (73% *Net Maint. Costs)	91,340	76,632	167,972

King Air C90 (27%*Net Maint. Costs)	33,783	28,343	62,126
<b>Total Allocation</b>	<b>125,123</b>	<b>104,975</b>	<b>230,098</b>
	<b><u>KA 350</u></b>	<b><u>KA C90</u></b>	<b><u>Total</u></b>
Allocated Maintenance Costs (FY12 & FY13)	\$167,972	\$62,126	\$230,098
Total Flight Hours (FY12 & FY13)	261.10	205.50	466.60
<b>Weighted Average Cost / Flight Hour</b>	<b>\$643</b>	<b>\$302</b>	<b>\$493</b>

- (1) Excludes non-maintenance related modification to King Air C90 in FY 2011-12
- (2) Average Resale value King Air 350 (\$1.563M) – 73%  
Average Resale value King Air C90 (\$585K) – 27%  
Total Resale Value – (\$2.148M) – 100%  
(Resale Values Provided by Aeronautics)

### *Travel Expenses*

Variable Travel Expenses include reimbursements to state employees and contract pilots for eligible travel expenses incurred during business trips. These travel expenses include reimbursements for meals, lodging, and other expenses such as parking fees. Travel expenses for aircraft maintenance staff and expenses associated with pilot training are included under fixed charges since these expenses do not vary with hours flown. To determine an hourly rate, we calculated the weighted average travel cost over two fiscal years. Table 2 outlines the calculation of the variable travel rate.

**Table 2**

	<b><u>FY 2011- 12</u></b>	<b><u>FY 2012- 13</u></b>	<b><u>Total</u></b>
Reimbursements for meals	1,410.00	1,974.00	3,384.00
Lodging Reimbursements	2,971.87	3,823.18	6,795.05
Other Travel	454.38	1,121.06	1,575.44
Non-State Employee Travel Expenses		677.01	677.01
<b>Total Travel</b>	<b>4,836.25</b>	<b>7,595.25</b>	<b>12,431.50</b>
<b>Total Flight Hours</b>	<b>183.30</b>	<b>283.30</b>	<b>466.60</b>
<b>Weighted Average Travel Cost / Flight Hour</b>			<b><u>\$26.64</u></b>

### *Airport Fees*

Variable airport fees include landing fees, ramp fees, de-icing and any other fees charged by airports when flying on official business. To determine an hourly rate for airport fees, we calculated the weighted average cost over a 2 year period. Table 3 summarizes the calculation of airport fees per flight hour.

***Table 3***

	<b><u>FY 2011- 12</u></b>	<b><u>FY 2012- 13</u></b>	<b><u>Total</u></b>
Total Airport Fees	3,069.00	6,748.00	9,817.00
Total Flight Hours	183.30	283.30	466.6
<b>Weighted Average Airport Fees / Flight Hour</b>			<b><u>\$21.04</u></b>

### *Fixed Costs*

Fixed Costs are those costs that do not change in total despite changes in total flight hours. These costs include salaries of pilots and aircraft maintenance staff, expenditures for telephones and data processing charges, aircraft insurance, electricity and utility expenses, and travel and training unrelated to flights. Since total fixed costs do not change with changes in flight hours, the total fixed cost per hour decreases as flight hours increase, and increases as flight hours decrease. In order to compare Aeronautics' total cost per hour to fly to private charter operators, the Board assumed a baseline number of flight hours to project fixed costs. Because of the new budget proviso prohibiting the use of the Division aircraft for athletic recruiting, the Board used two projections of annual flight hours for analysis. One projection, 233 hours, is the average flight hours per year for fiscal years 2011-12 and 2012-13. The second projection, 182 hours, is 233 hours reduced 22%, which is the percentage of flight hours attributed to athletic travel during the two fiscal years (for the purposes of this comparison, we are assuming this is for athletic recruiting which is precluded by proviso 117.120).

Additionally, the following adjustments and/or assumptions were made when calculating fixed costs:

### *Salaries and Fringe*

In addition to servicing Aeronautics' aircraft, aircraft maintenance staff also service aircraft owned by the Department of Natural Resources, SC Law Enforcement Division and the Civil Air Patrol when requested. When calculating salaries and fringe associated with maintaining the Division of Aeronautics' aircraft, we have excluded labor reimbursements from other state agencies for servicing their aircraft. Aeronautics was reimbursed \$25,025 and \$26,703 in Fiscal Years 2011-12 and 2012-13 respectively.

#### *Fixed Charges- Net Facility Costs*

Aeronautics incurs relatively little or no costs associated with operating their facility at Columbia Metropolitan airport as a result of rental income received from leasing their administration building and hangar space. Table 4 provides a summary of their rental income and lease costs.

**Table 4**

	<u><b>Amount</b></u>
<b>Rental Income:</b>	
National Guard Administration Building	\$60,012
National Guard (Quonset Hangar)	5,400
Dept of Natural Resources (Hangar Rental)	9,000
<b>Total Rental Income</b>	<b>\$74,412</b>
Lease Expense – Cola Metropolitan Airport (Beginning 1/1/14)	<b>\$73,611</b>

The analysis above is summarized in Appendices F and G.

After the Division's hourly variable and fixed flight rates were calculated, the rates were multiplied by the length of time needed to fly each of the five specified trips to produce the Division's cost for each trip.

The Board determined the time for the Division's aircraft to make each of the five trips by dividing the round trip distance by the normal cruise speed of the Division's aircraft. Round trip distance was determined by using an online flight plan development tool used to obtain the distance between origination and destination airports, and normal cruise speed was provided by the Division and the same as reported by Conklin and de Decker, a nationally recognized industry data source.

This methodology does not include wait or taxi time in the total trip time. However, that cost is reflected in the Division's hourly rate, which includes all of the Division's flight department cost for the year. This methodology also assumes the entire trip is flown at normal cruise speed, which understates trip time to some degree.

#### **Cost of Charter Service**

The Budget and Control Board requested pricing information from charter operators to estimate the cost for charter operators to provide transportation similar to that provided by the Aeronautics Division. The request was submitted to charter operators with aircraft based in South Carolina and within 100 miles of South Carolina's border airports. An Atlanta charter operator was also asked to respond because it had recently entered an agreement with the State of Georgia to provide it charter air service. The request was made in writing as a formal "Request

for Information”, with an explanation of the purpose of the request, a description of the passenger flights flown by the Aeronautics Division over fiscal years 2012 and 2013, and two templates for responses. One template asked for the charter operators’ hourly rate and other charges not included in the hourly rate. The second template asked charter operators to provide an all-inclusive price for 4 passengers to fly five specified trips. The five specified trips were representative of the more common flights flown by the Aeronautics Division during FY 2012 and FY 2013. Specifically, the charter operators were asked to provide a price to fly passengers on the following round trips:

<b>Passenger Departure and Return</b>	<b>Passenger Business Destination</b>
Columbia, SC	Charleston, SC
Columbia, SC	Greenville, SC
Columbia, SC	Washington, DC (with 1 overnight stay)
Columbia, SC	Hilton Head, SC
Clemson, SC	Columbia, SC

Trip pricing proved the most useful for comparing costs between the Aeronautics Division and charter operators. Although charter operators’ pricing features an hourly rate, the hourly rate may not include all customer costs. Hourly rates may not include expenses such as landing fees, pilots, overnight fees, stand-by fees or federal taxes and fees. Hourly rates usually include fuel at a set cost per gallon and customers receive an additional charge for the cost of fuel in excess of the base rate at the time of the flight. The expenses included in the hourly rate and the formulas by which they are calculated also vary among charter operators, and the hourly cost of a charter flight may apply to time spent taxiing before lift-off as well as actual flight time. All these nuances complicate and undermine the validity of a comparison of charters’ hourly rates with the Aeronautics Division’s cost calculated on the basis of the flight department’s total cost divided by its in-flight hours. Consequently, the Budget and Control Board limited its comparison of flight costs to the five trip scenarios presented in the Request for Information.

A comparison of costs on a trip basis also has its limitations. One, charter responses to the Request for Information are not binding on the respondents and therefore do not carry any commitment to actually provide air transportation at the prices provided. In addition, charter costs may be different depending upon the terms of an official Request for Proposals. Requiring certain types of aircraft, guarantees of aircraft availability or levels of insurance coverage are a few examples of terms that could increase or decrease charter operators’ proposals.

Finally, for its analysis, the Budget and Control Board used responses from only those charter operators with aircraft comparable to the Division’s King Air C90 and King Air 350. Comparable aircraft were identified for the Board by staff of the Division.

Limiting the comparison to aircraft similar to the Division’s effectively excluded pricing of trips in jet, single turboprop, and piston powered aircraft. Responses from charter operators generally indicated using a jet for in-state trips, which are the majority of the Division’s flights, would be

more costly than the same trip in the Division's turboprop aircraft. Jet aircraft are designed for efficiency at higher speeds and longer distances, so the difference is not unexpected. Responses from charter operators for single turboprops were very close to the cost of the Division for the same trip. Single turboprops are designed for usage similar to that of the aircraft operated by the Division; however, they only have one engine. All responses from charter operators with piston powered airplanes indicated their trip cost would be substantially less than that of the Division for the same trip, except the Columbia to Washington, D.C. flight. Again, this is not surprising. Piston aircraft are well-suited and economical for short missions. However, they are subject to vibration and louder cabin noise when cruising than turboprops and jets. Piston aircraft fly at lower altitudes, which has a bearing on the amount of turbulence and inclement weather conditions that may be encountered, and their cabins are typically smaller and may not be pressurized. These factors, among others, affect the "quality" of the flight experience, but they are beyond quantification for this analysis.

Given this background, the Budget and Control Board concluded the most useful comparison is trip cost among charter operators with aircraft similar to the Division's King Airs.

## **VI. Results: Cost Effectiveness Based on Trips Comparison**

The total flight hours flown by the Aeronautics Division varies from year to year due to a variety of factors. These factors include the flight needs of state officials, state agencies and universities, and limitations placed on the usage of the state's aircraft. As previously mentioned, one such limitation is proviso 117.120 which prohibits higher education institutions from using the state aircraft for athletic recruiting. All of these factors were taken into account when calculating the Aeronautics Division's total annual flight hours.

As mentioned in the Fixed Costs section of this report, two different comparisons were conducted using 182 total flight hours and 233 total flight hours for the Division. 233 total flight hours represents the average of total flight hours for FY 2012 and FY 2013 which were 183 and 283, respectively. 182 total flight hours represents the average of the total number of hours flown during FY 2012 and FY 2013, 233 hours, less 22%, which is the percentage of flight hours attributed to athletic travel (for the purposes of this comparison, we are assuming this is for athletic recruiting which is precluded by proviso 117.120). This method offers an "apples to apples" comparison of the preceding fiscal year and current fiscal year in which the use of the aircraft is limited by proviso. This method offers a comparison of the total flight hours of the two previous fiscal years regardless of the limitations placed on aircraft usage via proviso 117.120.

The Aeronautics Division provided the Budget and Control Board a list of comparable aircraft owned by the various charter operators. Six aircraft were identified as being comparable and included in this comparison. The six aircraft are twin turboprops similar to those operated by the Division. Of the Request for Information responses the Board received from charter operators,



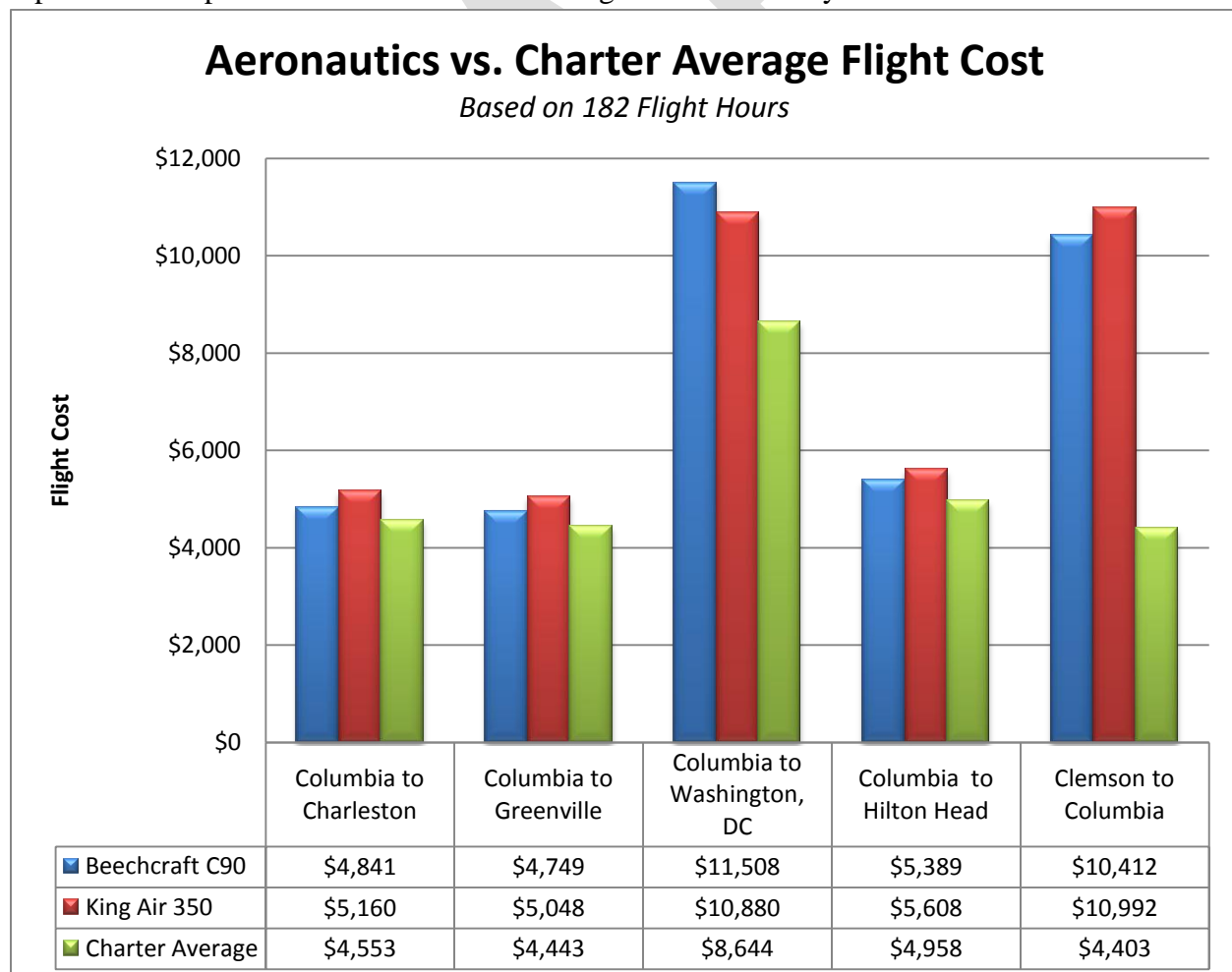
five operated one or more of the selected comparable aircraft. Five trip scenarios were used in the comparison:

Passenger Departure and Return	Passenger Business Destination
Columbia, SC	Charleston, SC
Columbia, SC	Greenville, SC
Columbia, SC	Washington, DC (with 1 overnight stay)
Columbia, SC	Hilton Head, SC
Clemson, SC	Columbia, SC

These trips are representative of the more common flights flown by the Division during FY 2012 and FY 2013.

*Comparison based on 182 Total Flight Hours*

The chart below shows the comparison of Aeronautics' flight costs for the Beechcraft C90 (in blue) and the King Air 350 (in red) against the charter average flight cost (in green) for the same trips. This comparison is based on 182 total flight hours flown by the Division.



For in-state flights originating out of Columbia, SC, with passengers, Aeronautics' costs using its Beechcraft C90 are 6% to 9% higher than the average cost for a charter company to make the same flight. Using the King Air 350, Aeronautics' costs are 13% to 14% higher. For the long-range out of state flight to Washington, DC with passengers, Aeronautics' cost using the Beechcraft C90 is 33% higher than the average for a charter company's and 26% higher using the King Air 350. The low number of Division annual flight hours drives up the Division's trip cost. Based on 182 total flight hours, Aeronautics' hourly rates are \$2,740 for the Beechcraft C90 and \$3,365 for the King Air 350.

For the Clemson, SC to Columbia, SC trip, Aeronautics' costs are 136% higher than the charter average using the Beechcraft C90 and 150% higher using the King Air 350. The originating location of the aircraft is the primary contributing factor to this result for two of the charters. Aeronautics' aircraft are located in Columbia, SC. Using the Clemson to Columbia scenario, Aeronautics would fly two empty leg flights, or flights without passengers, to pick up and return the passengers from Clemson. Essentially, Aeronautics would make the 113-mile trip four times (twice with passengers and twice without passengers). The charter companies that responded to the survey are located in Greenville, SC, Greenwood, SC, Augusta, GA, and Atlanta, GA. The distance between Clemson and the home base airport for the Greenville charter is 41 miles and 51 miles for the Greenwood charter. This shorter distance results in a lower cost for the charter companies located in Greenville and Greenwood. The distance between the Clemson and Augusta airport and the Clemson and Atlanta airport are 104 miles and 114 miles, respectively. Although the Augusta and Atlanta airports are relatively the same distance to Clemson as the Columbia airport, the Division's hourly rates at 182 hours annually cause the Division's trip cost to be higher.

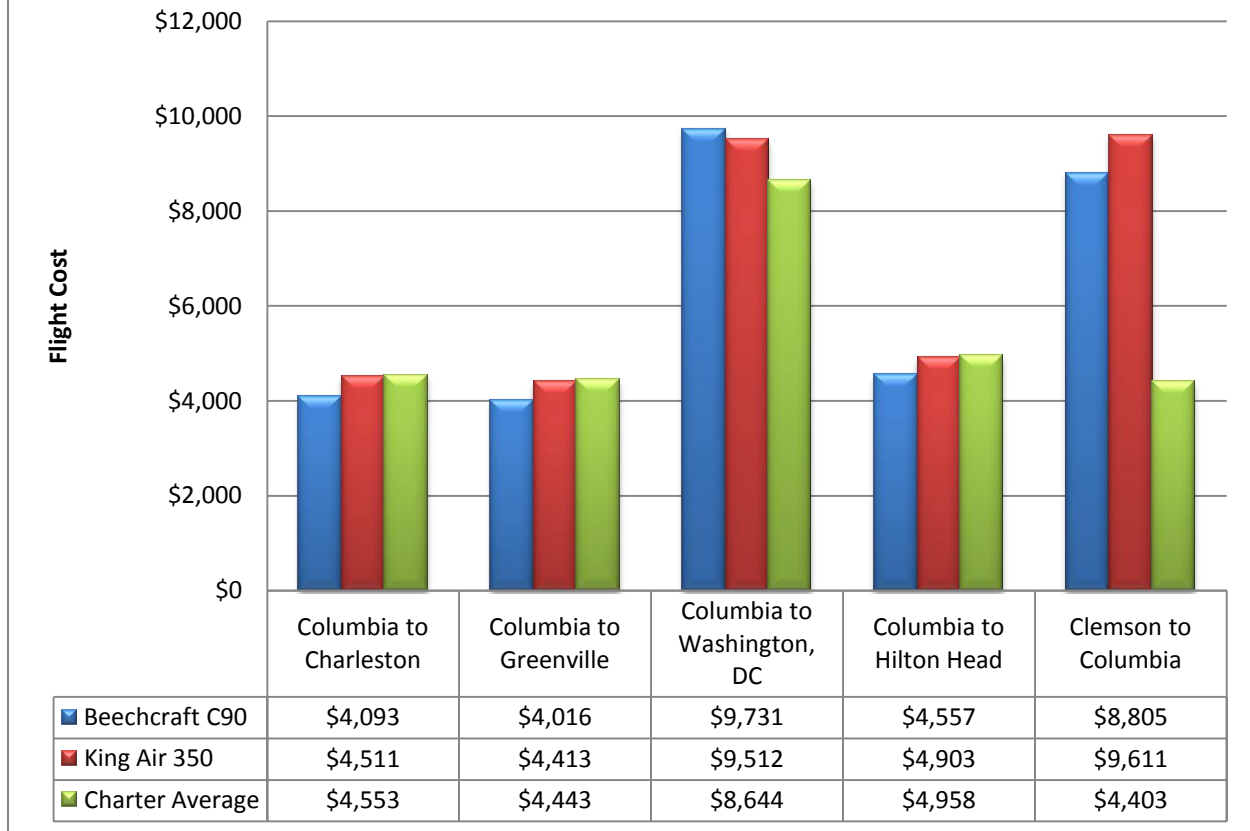
It should be noted that the prices offered by a charter company could be lower if a negotiated contract were in place. Conversely, Aeronautics' prices would be lower if the number of flight hours were increased.

#### *Comparison based on 233 Total Flight Hours*

The chart below shows the comparison of Aeronautics' flight costs for the Beechcraft C90 (in blue) and the King Air 350 (in red) against the charter average flight cost (in green) for the same trips. This comparison is based on 233 total flight hours flown by the Division.

## Aeronautics vs. Charter Average Flight Cost

*Based on 233 Flight Hours*



For in-state flights originating out of Columbia, SC, with passengers, Aeronautics' costs using its Beechcraft C90 are 8% to 10% lower than the average cost for a charter company to make the same flight. Using its King Air 350, Aeronautics' costs are 1% lower. Although the Division's trip costs are still affected significantly by its low number of annual flight hours, the location of its aircraft in Columbia makes the difference. Based on 233 total flight hours, Aeronautics' hourly rates are \$2,317 for its Beechcraft C90 and \$2,942 for its King Air 350. However, due to Aeronautics' aircraft being based in Columbia, there would be no expense for the empty leg flights to Columbia to pick up and drop off passengers as the charter companies would incur.

For the long-range out of state flight to Washington, DC, with passengers originating out of Columbia, SC, Aeronautics' costs are 13% higher than the average for a charter company using its Beechcraft C90 and 10% higher using its King Air 350.

For the Clemson, SC to Columbia, SC trip, Aeronautics' costs are 100% higher than the charter average using its Beechcraft C90 and 118% higher using its King Air 350. The originating location of the aircraft is the primary contributing factor to this result for two of the charters. Aeronautics' aircraft are located in Columbia, SC. Using the Clemson to Columbia scenario,

Aeronautics would fly two empty leg flights, or flights without passengers, to pick up and return the passengers from Clemson. Essentially, Aeronautics would make the 113-mile trip four times (twice with passengers and twice without passengers). The charter companies that responded to the survey are located in Greenville, SC, Greenwood, SC, Augusta, GA, and Atlanta, GA. The distance between Clemson and the home base airport for the Greenville charter is 41 miles and 51 miles for the Greenwood. This shorter distance results in a lower cost for the charter companies located in Greenville and Greenwood. The distance between the Clemson and Augusta airport and the Clemson and Atlanta airport are 104 miles and 114 miles, respectively. Although the Augusta and Atlanta airports are relatively the same distance to Clemson as the Columbia airport, the Division's hourly rate at 233 hours annually cause the Division's trip cost to be higher.

In summary, both of Aeronautics' aircraft fared better than the charter companies' average flight cost for in-state passenger flights that originate out of Columbia. The Beechcraft C90 had the lowest cost for the three in-state trips included in this comparison. However, Aeronautics' costs were still higher for the out of state flight and the passenger flight that originated outside of Columbia. Two charter companies were able to offer lower flight costs due primarily to their proximity to the point of passenger origination. As with the 182-flight hour comparison, charter company actual flight costs could be lower if they were based on a negotiated contract rate. Also, comparing Aeronautics' flight costs in the 182-flight hour to the 233-flight hour comparison shows the impact the total hours flown has on the Division's cost. As the number of total flight hours increases, Aeronautics' hourly rate decreases which results in lower flight costs for both of its aircraft.

## **VII. Quantifiable Opportunity Costs**

In addition to comparing trip costs, an analysis of the alternatives should include consideration of opportunity cost. That is, the value of what is lost by choosing one alternative over another should be a factor in the decision-making. Opportunity costs the Budget and Control Board could quantify are discussed below. Others that could not be validly quantified are discussed in section VIII of this analysis.

### **Aviation Fuel**

The Division of Aeronautics owns and manages an aviation fuel tank farm at its facilities on the Columbia Metropolitan Airport Campus and sells fuel to other state agency flight departments. The Division's primary customer is the Department of Natural Resources, but SLED and the Civil Air Patrol also purchased fuel from the Division during FY 2012 and FY 2013. Aeronautics sold these agencies 4,983 gallons in FY 2012 and 5,259 in FY2013 at a price of \$4.50 a gallon. According to a local vendor, the average retail market price for the fuel, and the price the agencies would have paid without the Division's fueling facilities over this period was

\$5.90 a gallon in FY 2013 to \$6.15 a gallon in FY 2012. If the Division's airplanes are sold and its support functions discontinued, other state agencies would be expected to incur approximately \$10,000 additional expense each year, based on FY 2012 and FY2013 activity and prices.

The Aeronautics Division is able to offer fuel at the reduced price because it monitors its tank levels and wholesale fuel prices to keep its tanks supplied with fuel at the most advantageous price. Aeronautics then passes the savings onto other agencies by only marking up the wholesale price \$.50 a gallon to cover costs of its equipment and line and pumping service personnel.

#### Parts and Maintenance

The Aeronautics Division maintains the three Department of Natural Resources' piston engine aircraft housed in the Division's hangar and services aircraft of the Civil Air Patrol and SLED upon request. The Division provides aircraft mechanic labor at \$55 an hour. Market shop rates depend upon the type aircraft serviced, with turbine/jet engines ranging from \$90 to \$110 an hour, and piston aircraft repair and maintenance running from \$65 to \$85 an hour. Based on information from the Division, it provided almost 890 hours of mechanic service to the Department of Natural Resources over the course of FY 2012 and FY 2013. At a market rate of \$80 an hour, this service would have cost the Department \$71,200 if provided by commercial shops instead of approximately \$48,950. Based on the FY 2012 and FY 2013 experience, closing the Division's support services would cost the Department of Natural Resources an additional \$11,125 annually.

Similarly, the Division purchases parts at wholesale and then resells them at less than market price to other state agencies. The Division offered two recent examples of agencies' savings. In FY 2013, the Division purchased and provided a replacement engine for one of the Department of Natural Resources aircraft at an estimated 15% off the market price, a savings of \$5,661. The Division also reports saving SLED approximately \$20,000 on a similar transaction.

#### One-Time Revenue From Sale-of State Aircraft

The King Air C90 was formally appraised as having an actual retail market value of \$575,000 to \$600,000 in July, 2010 and was purchased by the Division for \$600,000 in FY 2011. The Division reports the average retail market price for the King Air 350 is \$1,563,455 with a wholesale price of \$1,405,355, based upon a review of comparable aircraft for sale on the online market and use of software employed by an in-state commercial vendor who is engaged in aircraft management, maintenance and sales. If a decision is made to sell the Aeronautics Division's aircraft, the state should expect to receive a one-time sum of about \$2,000,000 at most.

### **VIII. Non-Financial/Unquantified Factors**

A cost benefit analysis usually involves assigning a monetary value to options for performing a business function. The object is to help decision-makers choose among alternatives based on facts rather than “gut feelings”. Unfortunately, many factors affecting a decision about selling the airplanes operated by the Aeronautics Division and using charter operators cannot be quantified, or at least, cannot be quantified with sufficient validity. The Budget and Control Board has attempted to identify and briefly discuss these factors in this section. The Budget and Control Board acknowledges that some of these factors, individually or collectively, may outweigh the cost comparisons reported above. It is also aware that some are weightier than others.

### Safety

Safety is a key consideration in any decision about air transportation, especially when the passengers are the top executives of state government and officers of corporations being recruited by the state. Although airplane accidents are relatively rare, they usually have tragic outcomes when they occur. The loss of life or serious injury to passengers transported by the state could have serious long term consequences for the state. Should an accident involve an economic development prospect, for example, efforts to recruit business to South Carolina could be set back for years.

The Aeronautics Division has a stellar safety record. For more than 78 years, the Division has operated a flight department without a major accident. Three years ago, in October 2010, the Division received the National Business Aviation Association’s Safe Flying Achievement Award recognizing the Division for 75 years of flight without an accident. The Division attributes its safety record, at least in part, to the Division’s on-site maintenance professionals and the experience and training of its pilots. According to the Division, it requires more of its pilots than the minimum standards mandated by the Federal Aviation Administration for on-demand passenger charter pilots. The Aeronautics Division reports that its pilots must possess an FAA commercial pilot certificate with multi-engine land and instrument rating and have a minimum of 4,000 hours for a captain on the King Air 350 and a minimum of 2,500 hour for a captain on the King Air C90. The FAA requires charter operator pilots to have only 1,200 hours for captain in the King Air 350, and there is no minimum pilot hour requirement for the King Air C90. The total flight time logged by the Division’s full and part-time pilots ranges from 4,212 to 12,300 hours. The chief pilot has a total of 6,500 hours flight time, 16 years flying experience, and an Airline Transport Pilot rating, which is also an FAA requirement for Aeronautics flights or charter operators. The total flight time logged by the Division’s full and part-time pilots ranges from 4,212 to 12,300 hours.

The Division reports from its observations, charter pilots often have close to the minimum Federal Aviation Administration requirements, somewhere in the range of 1,500 flight hours. The Division also reports being informed by a state agency currently using charter service that the agency has different pilots for most of their charter flights. It is commonplace, according to

the Division, for charters to own few if any of their fleet. Charter aircraft are frequently owned by an individual or company trying to defray the cost of aircraft ownership. The aircraft owner enters a contractual arrangement whereby the owner pays all the cost of owning and operating the aircraft, but allows the charter to lease the aircraft to third parties and generate revenue for the owner. The Division indicates many times in these arrangements the pilots are employees of or contract pilots for the aircraft owner rather than the charter operator, which the Division indicates may result in little, if any, standardized experience for these charter pilots. With aircraft ownership, the state is in direct control of aircraft maintenance and pilot selection.

These observations by the Division do not reflect directly on any charter operator surveyed by the Board or in the region, but they suggest an area of further investigation if an expanded analysis is needed.

#### *Aircraft Availability*

The Division does not keep data on the number of times it is unable to fulfill a request for an airplane, but there were a limited number of days in the past two years when both of the Division's aircraft were in the air on the same day. Consequently, it is reasonable to conclude that at least one of the state aircraft was almost always available when needed. The Division estimates an aircraft is unavailable only one to two times a year at most.

Division aircraft may be scheduled twenty-four hours a day, seven days a week, and can respond to a request within an hour, according to the Division.

Charter aircraft also may be scheduled twenty-four hours a day, seven days a week, and most charter operators reported they could respond to requests within two to four hours. Availability of charter aircraft is a function of demand and the size of a charter's fleet and ability to broker additional aircraft if needed. Most charters indicated five to seven days' notice was sufficient to ensure a reservation, but noted they are on-demand services with a first come, first served policy and strive to have their aircraft in use. In some cases, especially with short notice, available aircraft may not be the desired aircraft or one optimally suited for a particular mission.

#### *Resource Available for Emergency Response (e.g., hurricane)*

As noted above, the Division and its aircraft are part of the state's response in an emergency situation and the flight department participates in planning exercises for this role. It may be possible to "charter" aircraft in an emergency, but access and availability may be more limited and less reliable. In addition, a charter service is less likely to be involved in emergency preparedness activities and used more on an impromptu basis during and immediately after the emergency. Consequently, changing to charter service could result in diminished effectiveness and efficiency in responding to emergencies.

#### *Accountability: Centralized Posting of Flight Logs and Manifests*

Presently, the Division reports flight activity (logs and manifests) for all agencies using its services on the Division's website within one working day of each flight. The Division serves as a single source for the information. With a charter service, flight activity may be reported separately by each agency using the service, making it more challenging for the public to find and stay abreast of activity and expenditures for this category of travel.

#### *Recruitment of Economic Development Prospects*

Often the state uses air transportation in its efforts to recruit businesses to the State. If the State uses charters instead of its own aircraft, the state may have less flexibility in responding as discussions progress, especially if ad hoc scheduling and destinations are involved. Proponents of ownership also contend using a charter instead of a state-owned aircraft may affect closing a deal. The contention is that owning aircraft favorably influences business officials' perception of the state and its negotiators.

In addition, the Division has a track record of maintaining the confidentiality of economic development prospects when needed. Charter services have an array of clients, potentially increasing the chances of interaction with persons unfamiliar with and less sensitive to the need for confidentiality.

#### *Lower Cost Through Centralization of Funding*

Presently, the Division's operations are funded through a general fund appropriation, revenue earned from selling supplies and services, a fee for administering federal aviation grants, and, to a limited extent, an allowance from the State Aviation Fund which consists of taxes on aviation fuel and licensing fees for airports and landing fields. Now, subject to provisions of the annual general appropriation act and relevant state statutes, the Division is able to achieve its missions by allocating its resources between the flight and airport planning departments in a manner that is most advantageous and expeditious and as present circumstances dictate. This flexibility may allow a smaller appropriation to accommodate the operating needs of both departments than would be required if each department received its own discrete appropriation.

Similarly, a smaller appropriation may be needed when flight funding for several agencies is centralized. With centralized funding, an appropriation may be set in an amount that recognizes the fluctuations in demand for services among the agencies without having to provide each agency a budget sufficient to meet its anticipated need and exigencies. Presently, the Division receives an appropriation to cover the costs of some agencies' flights. If the state changes to a charter service, additional appropriated funds could be required to fund each agency adequately for its individual need.

Of course, some of the advantage of centralized funding may still be achieved whether or not the state owns planes. Division administration could be charged with managing a centralized appropriation and serving as the "travel agent" for some agencies. This approach may have the



significant disadvantage, however, of encouraging agencies covered by the centralized appropriation, to consume the limited resource before the other participating agencies. The approach could then result in an even greater appropriation than if each individual agency were appropriated and required to manage its own funds.

#### *Opportunity to Decrease Cost by Expanding Use*

Generally, the hourly cost of operating state owned planes decreases the more the planes are flown. This is primarily the result of spreading costs, both fixed and periodic, over more flight hours. Therefore, by increasing the current use of the planes, or by developing additional ways to employ the planes, the state could reduce the hourly cost of flight services. In contrast, with a charter service, the hourly rate is fixed. There is not a way to significantly increase the value of the service. In addition, once the state planes are sold and the flight department closed, the state would not be able to instantaneously or inexpensively resurrect the program should the state become disenchanted with available charter alternatives.

#### *Potential Reduction in Empty Legs*

The Division's aircraft are based at the Columbia Metropolitan Airport and dispatched from there. Consequently, the aircraft occasionally fly to another location before boarding any passengers. During FY 2012 and FY2013, 29% of the trips involved "empty leg" segments, and 24,622 statute miles were flown en route to pick up passengers and return to Columbia after dropping them off elsewhere. If the state moves to charter service, the state could potentially be divided into regions with each region served by a different charter airline situated in or near a particular region. This arrangement may reduce the number of passengerless flight segments and the cost of air service. However, because almost  $\frac{3}{4}$  of all flights depart and return to Columbia with passengers, regionalization would only be a viable alternative if a cost effective charter airline service was available in Columbia.

#### *Financial Stability of Charter Airlines*

The small profit margin and relatively small size of many charter services can result in more financial instability for charter airlines, with the resulting possibility the state's provider or providers may provide less satisfactory service to save expenses or even abruptly cease operations in extreme circumstances. If there is a solicitation, a strong balance sheet would need to be emphasized when assessing offerors' responsibility.

#### *Economic Impact of Using Out of State Charters*

If the State decided to use charters to meet its air transportation needs, out-of-state businesses may acquire the contract through a competitive solicitation. Should that be the case, ownership proponents contend state government would be sending South Carolina taxpayers' money out-of-state and thereby lose the economic impact of that spending in South Carolina. However,

presumably the decision to use charters instead of owning airplanes would be based, at least in part, upon a conclusion that charters are a more cost effective alternative. The cost savings would inure to the benefit of South Carolina and at least partially offset the effect of contracting with an out-of-state business.

## **IX. Concluding Remarks**

The cost effectiveness of the Aeronautics Division's flight department is dependent, in large measure, upon the level at which the state utilizes its aircraft. The more hours the aircraft are flown, the more fixed costs are reduced per trip and flight hour. At 182 flight hours a year, the Division's cost to fly all five trips is higher than the average charter cost. But at 233 hours, the results are different. The Division's cost is less than the average charter cost for three of the four in-state trips. For the other in-state trip, the Division's cost is higher primarily because passengers were picked up and dropped nearer to the charter's base of operations than the Division. For the out-of-state flight, the Division's cost still exceeded the average charter cost, apparently because utilization of the Division's aircraft is still too low at 233 hours to sufficiently reduce its hourly cost.

As reported, factors beyond cost effectiveness are also important in reaching an ultimate decision whether to sell the Division's aircraft. However, these factors cannot be validly assigned a monetary value. Their importance and value must be determined by public policy decision-makers.

# **APPENDICES**

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## **Appendix A**

### **A. Establishment and Structure of the Aeronautics Commission**

#### **1. Division of Budget and Control Board governed by Aeronautics Commission**

SECTION 55-1-1. There is created a Division of Aeronautics within the South Carolina Budget and Control Board that shall be governed by the Aeronautics Commission as provided in Chapter 1, Title 57.

SECTION 13-1-1010. Notwithstanding any other provision of law, the Aeronautics Commission is hereby created within the Budget and Control Board. The Budget and Control Board shall provide administrative support functions to the division. The commission shall oversee the operation of the division as the division's governing body. The Joint Bond Review Committee must review, prior to approval by the Aeronautics Commission, purchases or sales of any aeronautics assets, the value of which exceeds fifty thousand dollars. There may be no purchase or sale of any aeronautics assets without the approval of the commission.

#### **2. Division must be maintained as a distinct component/function**

A270, R293, H3918, SECTION 15.

A. The Aeronautics Commission, and the commission's functions, powers, duties, and responsibilities transferred to the Budget and Control Board, or its successor entity, by this act must be maintained as a distinct component, function, power, duty, or responsibility of the Budget and Control Board, or its successor entity. Any funds appropriated to the commission must not be transferred to another component of the Budget and Control Board, or its successor entity. Any funds appropriated for a distinct function, power, duty, or responsibility of the commission must be exercised by the commission.

B. Regulations promulgated by this commission as it formerly existed under the Department of Commerce are continued and are considered to be promulgated by this commission under the Budget and Control Board, or its successor entity.

C. The Aeronautics Commission shall use its existing resources that are transferred to the Budget and Control Board, or its successor entity, including, but not limited to, funding, personnel, equipment, and supplies.

D. Any reference to the Budget and Control Board shall mean the Budget and Control Board or its successor entity.

#### **3. Composition of Commission**

SECTION 13-1-1020. Notwithstanding any other provision of law, the congressional districts of this State are constituted and created commission districts of the State, designated by numbers corresponding to the number of the respective congressional districts. The commission shall be composed of one member from each district elected by the delegations of the congressional

district and one member appointed by the Governor, upon the advice and consent of the Senate, from the State at large. The elections or appointments shall take into account race and gender so as to represent, to the greatest extent possible, all segments of the population of the State and shall comply with the provisions of Chapter 13, Title 8. However, consideration of these factors in making an appointment or in an election does not create a cause of action or basis for an employee grievance for a person appointed or elected or for a person who fails to be appointed or elected.

#### SECTION 13-1-1030.

(A) Notwithstanding any other provision of law, a county that is divided among two or more commission districts, for purposes of electing a commission member, is considered to be in the district which contains the largest number of residents from that county.

(B) Notwithstanding any other provision of law, no county within a commission district shall have a resident commission member for more than one consecutive term and in no event shall any two persons from the same county serve as a commission member simultaneously.

#### SECTION 13-1-1050.

(A) Notwithstanding any other provision of law, beginning February 15, 2005, commissioners must be elected by the legislative delegation of each congressional district. For the purposes of electing a commission member, a legislator shall vote only in the congressional district in which he resides. All commission members must serve for a term of office of four years that expires on February fifteenth of the appropriate year. Commissioners shall continue to serve until their successors are elected and qualify, provided that a commissioner may only serve until their successors are elected and qualify, and provided that a commissioner may only serve in a hold over capacity for a period not to exceed six months. Any vacancy occurring in the office of commissioner must be filled by election in the manner provided in this article for the unexpired term only. No person is eligible to serve as a commission member who is not a resident of that district at the time of his appointment, except that the at large commission member may be appointed from any county in the State regardless of whether another commissioner is serving from that county. Failure by a commission member to maintain residency in the district for which he is elected shall result in the forfeiture of his office. The at large commission member, upon confirmation by the Senate, shall serve as chairman of the commission.

(B) The terms of the initial members of the commission appointed from congressional district are as follows:

- (1) commission members appointed to represent congressional district one and two, two years;
- (2) commission members appointed to represent congressional district three, four, and seven, three years;
- (3) commission members appointed to represent congressional district five and six, four years.

(C) The at large commissioner shall serve at the pleasure of the Governor.

4. Qualifications for commission chairman and members.

SECTION 13-1-1090. Notwithstanding any other provision of law, individuals serving on the commission must meet the following minimum qualifications to be qualified:

- (1) the commission chairman must have experience in the fields of business, general aviation, and airport management;
- (2) all other members of the commission must have a proven record of public and community service, and experience in the fields of business and aviation. Additionally, each member must meet at least two of the following criteria:
  - (a) general aviation experience;
  - (b) airport or fixed based operator (FBO) management experience;
  - (c) aviation service provider experience;
  - (d) previous service as a state or regional airport commissioner;
  - (e) legal experience; or
  - (f) active involvement in a recognized aviation association.

5. Appointment of Executive Director for Division

SECTION 13-1-1080. Notwithstanding any other provision of law, the executive director shall be appointed in accordance with the following procedures:

- (A)(1) The commission shall nominate no more than one qualified candidate for the Governor to consider for appointment as executive director. In order to be nominated, a candidate must meet the minimum requirements as provided in Section 13-1-1090.
- (2) If the Governor rejects a person nominated by the commission for the position of executive director, the commission must nominate another candidate for the Governor to consider until such time as the Governor makes an appointment.
- (3) In the case of a vacancy in the position of executive director for any reason, the name of a nominee for the executive director's successor must be submitted by the commission to the Governor.
- (4) The appointment must comply with the provisions contained in Chapter 13, Title 8.
- (B) The executive director shall serve at the pleasure of the commission and be appointed as provided in this section.

6. SECTION 55-5-50. Executive director of aeronautics and other employees.

Notwithstanding another provision of law, the division shall employ an executive director of aeronautics in accordance with the provision contained in Section 13-1-1050 and 13-1-1080 and other employees necessary for the proper transaction of the division's business.

7. SECTION 55-1-5. For the purposes of Chapters 1 through 9, Title 55, the following words and terms are defined as follows:... (9) "Commission" means the Aeronautics Commission which shall assist and oversee the operation of the division.... (11) Notwithstanding another provision of law, "Executive Director" means the person or persons appointed by the Governor in accordance with Section 13-1-1080 and serving at the pleasure of the Aeronautics Commission to supervise and carry out the functions and duties of the Division of Aeronautics as provided for by law.

## **B. Commission/Division Mission**

1. **Airport Development Department** – Commission fosters air commerce by overseeing the safety and development of the state’s public use airports.
2. **Flight Department** – Commission provides safe, reliable air transportation for state agency employees, legislators, constitutional officers, and business prospects.

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## Appendix B

### Round Trips FY 2012

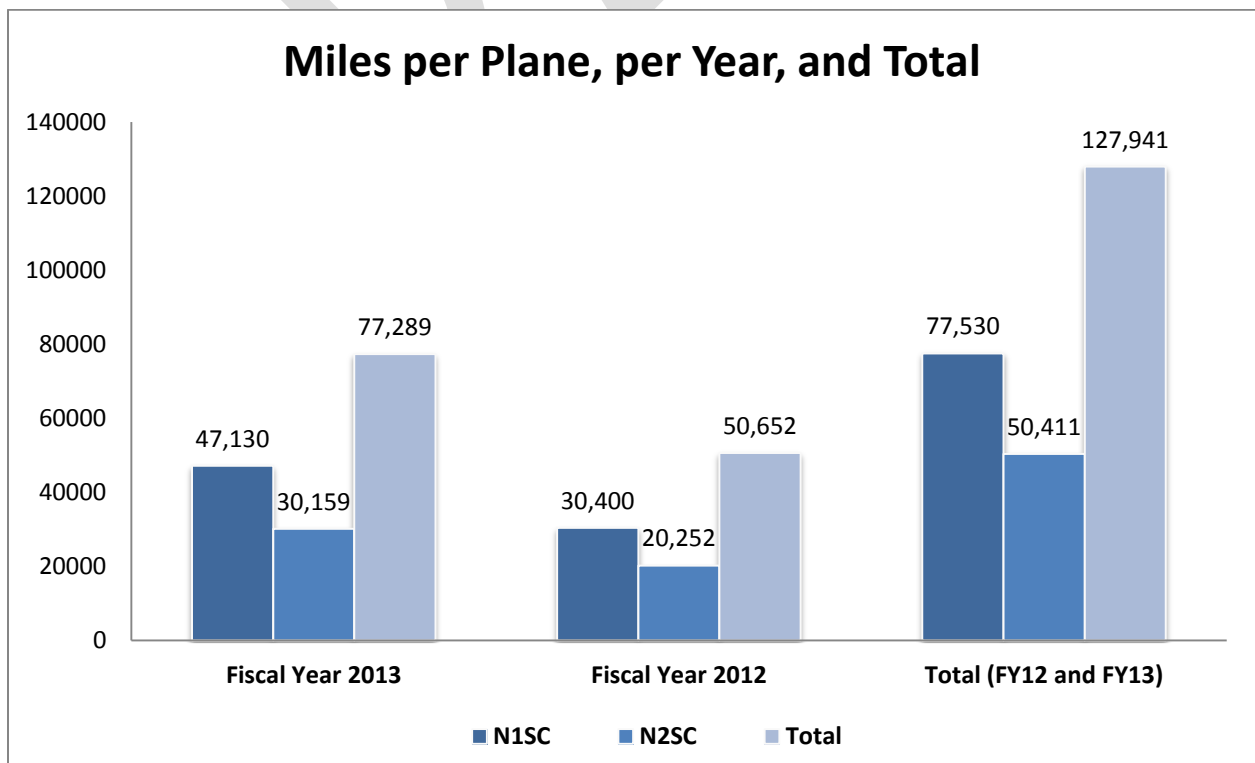
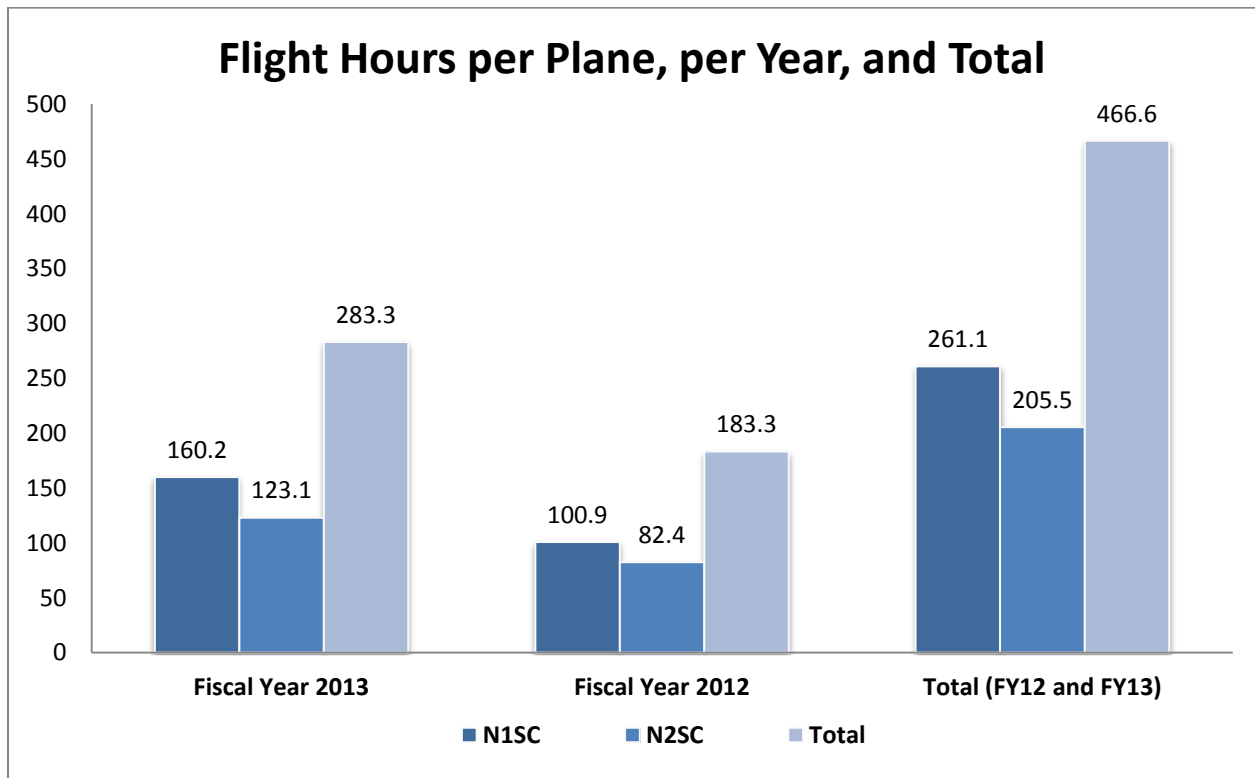
Aircraft	# of Trips	Statute Miles	Avg Miles/Trip	Flight Hours	AvgHours/Trip
<b>N1SC (350)</b>					
In-State	24	8,269	344.54	29.4	1.23
Out-of-State	22	22,131	1005.95	71.5	3.25
Total	46	30,400	660.87	100.9	2.19
<b>N2SC (C90)</b>					
In-State	29	11,365	391.90	46.8	1.61
Out-of-State	11	8,887	807.91	35.6	3.24
Total	40	20,252	506.30	82.4	2.06
<b>Both Aircraft</b>					
In-State	53	19,634	370.45	76.2	1.44
Out-of-State	33	31,018	939.94	107.1	3.25
Total	86	50,652	588.98	183.3	2.13

### Round Trips FY 2013

Aircraft	# of Trips	Statute Miles	Avg Miles/Trip	Flight Hours	Avg Hours/Trip
<b>N1SC (350)</b>					
In-State	21	7,437	354.14	27.5	1.31
Out-of-State	36	39,693	1102.58	132.7	3.69
Total	57	47,130	826.84	160.2	2.81
<b>N2SC (C90)</b>					
In-State	37	14,355	387.97	60.6	1.64
Out-of-State	22	15,804	718.36	62.5	2.84
Total	59	30,159	511.17	123.1	2.09
<b>Both Aircraft</b>					
In-State	58	21,792	375.72	88.1	1.52
Out-of-State	58	55,497	956.84	195.2	3.37
Total	116	77,289	666.28	283.3	2.44

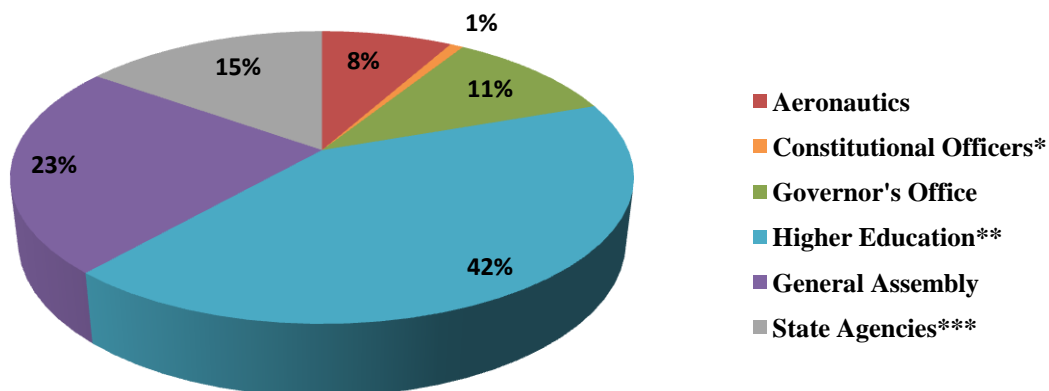


### Appendix C



## Appendix D

### Percentage of Aircraft Use by Authorizing Party FY 2012

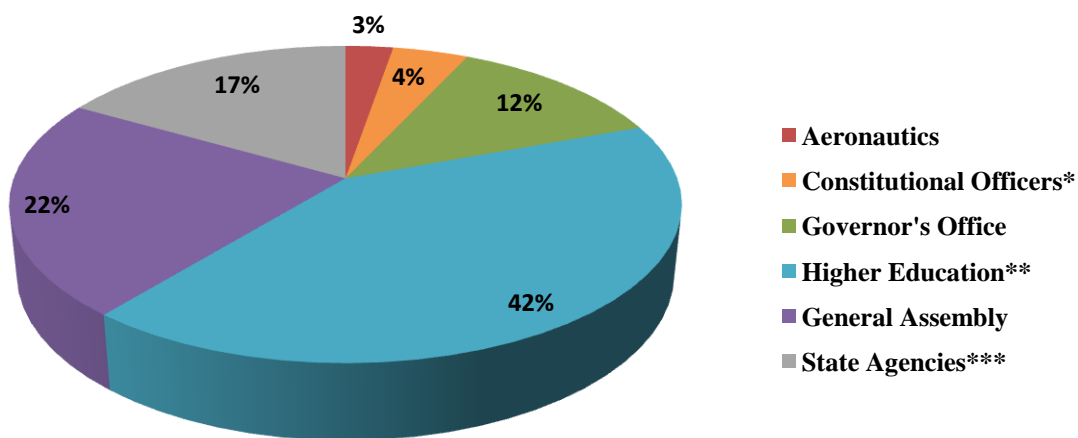


*\*Includes State Treasurer's Office*

*\*\*Includes Clemson University*

*\*\*\*Includes Department of Commerce, Ports Authority, and Department of Agriculture*

### Percentage of Aircraft Use by Authorizing Party FY 2013



*\*Includes State Treasurer's Office and Attorney General*

*\*\*Includes Clemson University, Coastal Carolina University, and Medical University of South Carolina*

*\*\*\*Includes Department of Commerce and Ports Authority*

## Appendix E

### Round Trips for Both Aircraft FY12 and FY13 - Excluding Athletic

Fiscal Year	# of Trips	Statute Miles	Avg Miles/Trip	Flight Hours	Avg Hours/Trip
<b>FY 2013 (Both Aircraft)</b>					
In-State	58	21,394	368.86	86.5	1.49
Out-of-State	44	40,292	915.73	141.1	3.21
Total	102	61,686	604.76	227.6	2.23
<b>FY 2012 (Both Aircraft)</b>					
In-State	47	15,729	334.66	62.1	1.32
Out-of-State	25	21,092	843.68	74.1	2.96
Total	72	36,821	511.40	136.2	1.89
<b>Total (Both Aircraft)</b>					
In-State	105	37,123	353.55	148.6	1.42
Out-of-State	69	61,384	889.62	215.2	3.12
Total	174	98,507	566.13	363.8	2.09

## Appendix F

### Aeronautics Cost Calculation based on 182 Flight Hours

	<b>King Air 350</b>	<b>King Air C90</b>
<b>Estimated Variable Costs/Flight Hour:</b>		
Aviation Fuel	504.00	300.00
Engine Reserves	234.00	154.00
Maintenance Supplies and Services	643.00	302.00
Travel Expenses	26.64	26.64
Airport Fees	21.04	21.04
<b>Total Variable Cost / Flight Hour</b>	1,428.68	803.68
<b>Estimated Fixed Costs/Flight Hour <sup>(1)</sup>:</b>	1,936.81	1,936.81
<b>Total Cost / Flight Hour</b>	<b>\$3,365.49</b>	<b>\$2,740.49</b>

**<sup>(1)</sup> Estimated Fixed Costs - Flight Department:**

<i>Salaries and Fringe</i>	
Pilots and Aircraft Maintenance Staff	260,000
<i>Contractual Services</i>	
Telephones, Data Processing, Uniform Cleaning, etc	25,000
<i>Supplies</i>	
Clothing, Educational, misc. supplies	1,000
<i>Fixed Charges</i>	
Aircraft Insurance and Other fixed Charges	40,000
<i>Fixed Travel and Training</i>	
Pilot Training and Aircraft Maintenance Travel Exps	11,000
<i>Electricity &amp; Utilities</i>	
Allocated Electricity and Utilities	14,500
<i>Other Miscellaneous Exps</i>	
Other costs not reflected in another category	1,000
<b>Total Fixed Costs</b>	<b>352,500</b>
<b>Cost / Hour based on 233 Flight Hours / Year</b>	<b>\$ 1,937</b>

## Appendix G

### Aeronautics Cost Calculation based on 233 Flight Hours

	King Air 350	King Air C90
<b>Estimated Variable Costs/Flight Hour:</b>		
Aviation Fuel	504.00	300.00
Engine Reserves	234.00	154.00
Maintenance Supplies and Services	643.00	302.00
Travel Expenses	26.64	26.64
Airport Fees	21.04	21.04
<b>Total Variable Cost / Flight Hour</b>	1,428.68	803.68
<b>Estimated Fixed Costs/Flight Hour <sup>(1)</sup>:</b>	1,512.88	1,512.88
<b>Total Cost / Flight Hour</b>	<b>\$ 2,941.56</b>	<b>\$ 2,316.56</b>

<b><sup>(1)</sup> Estimated Fixed Costs - Flight Department:</b>	
<i>Salaries and Fringe</i>	
Pilots and Aircraft Maintenance Staff	260,000
<i>Contractual Services</i>	
Telephones, Data Processing, Uniform Cleaning, etc	25,000
<i>Supplies</i>	
Clothing, Educational, misc. supplies	1,000
<i>Fixed Charges</i>	
Aircraft Insurance and Other fixed Charges	40,000
<i>Fixed Travel and Training</i>	
Pilot Training and Aircraft Maintenance Travel Exps	11,000
<i>Electricity &amp; Utilities</i>	
Allocated Electricity and Utilities	14,500
<i>Other Miscellaneous Exps</i>	
Other costs not reflected in another category	1,000
<b>Total Fixed Costs</b>	<b>352,500</b>
<b>Cost / Hour based on 233 Flight Hours / Year</b>	<b>\$ 1,513</b>

## Appendix H

### Flight Cost Ranking

182 Flight Hours per Year

<u>Columbia - Charleston</u>		
Rank	Vendor Option	Cost
1	Option #4 - Atlanta	\$6,103
2	Option #3 - Greenville	\$5,327
3	<i>Aeronautics 350</i>	<i>\$5,160</i>
4	Option #6 - Augusta	\$5,050
5	<i>Aeronautics C90</i>	<i>\$4,841</i>
6	Option #2 - Greenville	\$4,560
	<i>Charter Average</i>	<i>\$4,553</i>
7	Option #1 - Greenville	\$4,515
8	Option #5 - Augusta	\$4,098
9	Option #7 - Greenwood	\$3,571
10	Option #8 - Augusta	\$3,482

<u>Columbia to Hilton Head</u>		
Rank	Vendor Option	Cost
1	Option #4 - Atlanta	\$6,506
2	<i>Aeronautics 350</i>	<i>\$5,608</i>
3	<i>Aeronautics C90</i>	<i>\$5,389</i>
4	Option #3 - Greenville	\$5,610
5	Option #6 - Augusta	\$5,559
6	Option #1 - Greenville	\$5,050
7	Option #2 - Greenville	\$5,008
	<i>Charter Average</i>	<i>\$4,958</i>
8	Option #5 - Augusta	\$4,382
9	Option #8 - Augusta	\$3,982
10	Option #7 - Greenwood	\$3,909

<u>Columbia - Greenville</u>		
Rank	Vendor Option	Cost
1	Option #4 - Atlanta	\$6,068
2	Option #3 - Greenville	\$5,327
3	Option #6 - Augusta	\$5,050
4	<i>Aeronautics 350</i>	<i>\$5,048</i>
5	<i>Aeronautics C90</i>	<i>\$4,749</i>
	<i>Charter Average</i>	<i>\$4,443</i>
6	Option #1 - Greenville	\$4,406
7	Option #2 - Greenville	\$4,345
8	Option #5 - Augusta	\$4,098
9	Option #8 - Augusta	\$3,428
10	Option #7 - Greenwood	\$3,160

<u>Clemson to Columbia</u>		
	Vendor Option	Cost
1	<i>Aeronautics 350</i>	<i>\$10,992</i>
2	<i>Aeronautics C90</i>	<i>\$10,412</i>
3	Option #6 - Augusta	\$5,729
4	Option #4 - Atlanta	\$5,053
5	Option #3 - Greenville	\$4,987
6	Option #5 - Augusta	\$4,522
	<i>Charter Average</i>	<i>\$4,403</i>
7	Option #2 - Greenville	\$3,830
8	Option #1 - Greenville	\$3,765
9	Option #7 - Greenwood	\$3,160

<u>Columbia - Washington, DC</u>		
Rank	Vendor Option	Cost
1	<i>Aeronautics C90</i>	<i>\$11,508</i>
2	Option #4 - Atlanta	\$11,156
3	<i>Aeronautics 350</i>	<i>\$10,880</i>
4	Option #6 - Augusta	\$10,646
5	Option #3 - Greenville	\$9,537
6	Option #2 - Greenville	\$9,125
7	Option #5 - Augusta	\$9,075
	<i>Charter Average</i>	<i>\$8,663</i>
8	Option #1 - Greenville	\$8,027
9	Option #7 - Greenwood	\$7,656
10	Option #8 - Augusta	\$4,082

**Appendix I**  
**Flight Cost Ranking**  
*233 Flight Hours per Year*

<b>Columbia - Charleston</b>		
Rank	Vendor Option	Cost
1	Option #4 - Atlanta	\$6,103
2	Option #3 - Greenville	\$5,327
3	Option #6 - Augusta	\$5,050
4	Option #2 - Greenville	\$4,560
	<b>Charter Average</b>	<b>\$4,553</b>
5	Option #1 - Greenville	\$4,515
6	<b>Aeronautics 350</b>	<b>\$4,511</b>
7	Option #5 - Augusta	\$4,098
8	<b>Aeronautics C90</b>	<b>\$4,093</b>
9	Option #7 - Greenwood	\$3,571
10	Option #8 - Augusta	\$3,482

<b>Columbia - Hilton Head</b>		
Rank	Vendor Option	Cost
1	Option #4 - Atlanta	\$6,505
2	Option #3 - Greenville	\$5,610
3	Option #6 - Augusta	\$5,559
4	Option #1 - Greenville	\$5,050
5	Option #2 - Greenville	\$5,008
	<b>Charter Average</b>	<b>\$4,958</b>
6	<b>Aeronautics 350</b>	<b>\$4,903</b>
7	<b>Aeronautics C90</b>	<b>\$4,557</b>
8	Option #5 - Augusta	\$4,382
9	Option #8 - Augusta	\$3,982
10	Option #7 - Greenwood	\$3,909

<b>Columbia - Greenville</b>		
Rank	Vendor Option	Cost
1	Option #4 - Atlanta	\$6,068
2	Option #3 - Greenville	\$5,327
3	Option #6 - Augusta	\$5,050
	<b>Charter Average</b>	<b>\$4,443</b>
4	<b>Aeronautics 350</b>	<b>\$4,413</b>
5	Option #1 - Greenville	\$4,406
6	Option #2 - Greenville	\$4,345
7	Option #5 - Augusta	\$4,098
8	<b>Aeronautics C90</b>	<b>\$4,016</b>
9	Option #8 - Augusta	\$3,428
10	Option #7 - Greenwood	\$3,160

<b>Clemson to Columbia</b>		
Rank	Vendor Option	Cost
1	<b>Aeronautics 350</b>	<b>\$9,611</b>
2	<b>Aeronautics C90</b>	<b>\$8,805</b>
3	Option #6 - Augusta	\$5,729
4	Option #4 - Atlanta	\$5,053
5	Option #3 - Greenville	\$4,987
6	Option #5 - Augusta	\$4,522
	<b>Charter Average</b>	<b>\$4,403</b>
7	Option #2 - Greenville	\$3,830
8	Option #1 - Greenville	\$3,765
9	Option #7 - Greenwood	\$3,160

<b>Columbia - Washington, DC</b>		
Rank	Vendor Option	Cost
1	Option #4 - Atlanta	\$11,156
2	Option #6 - Augusta	\$10,646
3	<b>Aeronautics C90</b>	<b>\$9,731</b>
4	Option #3 - Greenville	\$9,537
5	<b>Aeronautics 350</b>	<b>\$9,512</b>
6	Option #2 - Greenville	\$9,125
7	Option #5 - Augusta	\$9,075
	<b>Charter Average</b>	<b>\$8,644</b>
8	Option #1 - Greenville	\$8,027
9	Option #7 - Greenwood	\$7,656
10	Option #8 - Augusta	\$4,082

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