**Memorandum from the Office of the Inspector General**

March 29, 2018

Jacinda B. Woodward, BR 4D-C

REQUEST FOR FINAL ACTION – AUDIT 2017-15470 – TVA'S FIXED-WING AIRCRAFT

Attached is the subject final report for your review and final action. Your written comments, which addressed your management decision and actions planned or taken, have been included in the report. Please notify us when final action is complete. In accordance with the Inspector General Act of 1978, as amended, the Office of the Inspector General is required to report to Congress semiannually regarding audits that remain unresolved after 6 months from the date of report issuance.

If you have any questions or wish to discuss our findings, please contact Melissa M. Neusel, Audit Manager, at (865) 633-7357 or Rick C. Underwood, Director, Financial and Operational Audits, at (423) 785-4824. We appreciate the courtesy and cooperation received from your staff during the audit.

David P. Wheeler
Assistant Inspector General
(Audits and Evaluations)
ET 3C-K

MMN:BSC
Attachment
cc (Attachment):
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OIG File No. 2017-15470

Office of the Inspector General

*Audit Report*

To the Senior Vice President, Resources and River Management

# TVA'S FIXED-WING AIRCRAFT

Audit Team
Melissa M. Neusel
Maria V. Edwards

Audit 2017-15470
March 29, 2018

# ABBREVIATIONS

| | |
|---|---|
| BART | Business Aircraft Records and Tracking |
| CFR | Code of Federal Regulations |
| FAIRS | Federal Aviation Interactive Reporting System |
| FTR | Federal Travel Regulation |
| FWA | Fixed-Wing Aircraft |
| GSA | General Services Administration |
| OGC | Office of General Counsel |
| OIG | Office of the Inspector General |
| OMB | Office of Management and Budget |
| SFTR | Senior Federal Travel Report |
| SPP | Standard Programs and Processes |
| TVA | Tennessee Valley Authority |
| USC | United States Code |

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## APPENDICES

# Audit 2017-15470 – TVA's Fixed-Wing Aircraft

## EXECUTIVE SUMMARY

### Why the OIG Did This Audit

A recent Office of the Inspector General audit of non-competed contracts[i] noted the Tennessee Valley Authority (TVA) purchased two new fixed-wing aircraft (FWA) through sole source contracts in May 2015. TVA paid $17.7 million for the FWA, including $11,211,762 for a Citation XLS+ jet and $6,457,675 for a King Air 350i turboprop.[ii] Due to the cost associated with the FWA purchases, we scheduled an audit to determine (1) whether TVA's decision to purchase these aircraft was reasonable compared to aircraft used by other utilities, (2) how the cost and use of the aircraft compared to that of other utilities and industry standards, and (3) whether the use of the aircraft is consistent with applicable federal laws and regulations. Our audit scope included all flight legs by both aircraft between July 1, 2015, and February 28, 2017.

### What the OIG Found

We were unable to obtain benchmarking information about the cost and use of FWA for other utilities. However, we were able to obtain the number and type of FWA registered to eight of TVA's peers as of March 2017. In summary:

- One utility peer had one midsize jet.
- One federal power marketing administration that has a larger geographic service area than TVA (Bonneville Power Administration) had two King Air turboprops.
- The other six utilities had larger fleets consisting of three or four midsize to long range jets. All six had larger geographic areas than TVA when the parent company's lines of business were considered (i.e., coast to coast, separate regions of North America, or overseas locations).

Although the number of FWA in TVA's fleet is generally comparable to the number of FWA maintained by eight of its peers, we determined:

- TVA's stated justifications for sole sourcing the purchase of the aircraft (capable of carrying nine passengers and landing within a 4,000 foot

[i] Audit Report 2016-15408, *Audit of Non-Competed Contracts*, May 23, 2017.

[ii] Prior to purchasing the two aircraft in May 2015, TVA leased a King Air 350 turboprop from 1995 until 2001 when TVA entered into a new lease agreement for a new (2001) King Air 350. TVA continued to lease the 2001 King Air until 2011 when the aircraft was purchased for $2.8 million. TVA sold the King Air in June 2016 for $1,583,250.

runway) were not supported by analytical cost, safety, reliability, or time efficiency documentation, nor did the documentation provided by TVA to support the 2015 purchase include any analyses of historical usage to determine TVA's FWA needs. In addition, the two justifications given were not consistent with how the aircraft have been used since the aircraft were purchased.

- The purchase of a jet instead of a second turboprop has not been cost effective because, in addition to the higher purchase price for the jet, (1) the turboprop has a lower operating cost, and (2) the time savings for use of the jet compared to the turboprop are negligible based on TVA's usage.

Additionally, (1) TVA may not have complied with Title 31, United States Code, Section 1344(a)(1), Passenger Carrier Use, and (2) TVA did not comply with various federal regulations and TVA policies and procedures regarding use of the aircraft. Specifically:

- Cost comparison analyses prior to using the FWA were not performed.
- Business justifications prior to using the FWA were not documented.
- Authorizations prior to using the FWA were not obtained.
- Some aircraft usage appeared to be for the personal preference and convenience of TVA's Chief Executive Officer, including flights to/from his second personal residence that is located outside the TVA service area.
- Periodic reporting on the cost and use of the aircraft to the General Services Administration has been inaccurate and incomplete.

Failure to follow the federal laws and regulations (1) prevents TVA from being able to accurately determine the need for owning aircraft, (2) prevents TVA from ensuring travel costs are managed effectively, and (3) may cause reputational risks for TVA with regard to misuse (or perceived misuse) of the aircraft.

### What the OIG Recommends

We made ten recommendations to TVA management to improve (1) controls around the purchase of any future aircraft, (2) use of the FWA, and (3) compliance with all applicable laws and regulations. Our detailed recommendations are listed in the body of this report.

# EXECUTIVE SUMMARY

## TVA Management's Comments

TVA management stated they disagreed with several of our findings regarding (1) sole source justifications, (2) cost-effectiveness calculations, and (3) compliance with laws and regulations. However, management stated the audit recommendations were generally reasonable and align with improvement initiatives already underway. TVA management also provided their plan to address each recommendation. See Appendix C for management's complete response.

## Auditor's Response

As discussed in detail in the attached report, TVA management's explanations for why they disagreed with our findings regarding (1) sole source justifications, (2) cost-effectiveness calculations, and (3) compliance with laws and regulations did not change our conclusions on the specific findings. However, management's stated plans for addressing our recommendations should improve TVA's compliance with federal laws and regulations in the future.

# BACKGROUND

A recent Office of the Inspector General (OIG) audit of non-competed contracts[1] noted the Tennessee Valley Authority (TVA) purchased two new fixed-wing aircraft (FWA), a jet and a turboprop, through sole source contracts in May 2015. As summarized in Table 1 below, TVA paid $17,669,437 for the two FWA.

| Type of Aircraft | Amount Paid |
|---|---|
| Cessna 560XL Citation XLS+ jet | $11,211,762 |
| Beechcraft King Air 350i turboprop | 6,457,675 |
| **Total Paid** | **$17,669,437** |

**Table 1**

TVA's contract approval documentation for both the jet and the turboprop stated "TVA is in need of an aircraft with newer technology that enhances safety, increases reliability and performance while reducing maintenance expense. Additionally, the newer aircraft will enable short field landing and takeoff for nine passengers on runways under 4,000 ft."[2] The sole source approval documentation included with the contract approval documentation for the jet and turboprop further explained TVA needed "safe, reliable, time-efficient transportation of Board members, TVA executives and employees." The documentation also stated TVA was requesting approval to sole source the purchases of the aircraft because there was only one jet and one turboprop that met TVA's specification for being able to carry nine passengers and land within a 4,000 foot runway.

The Citation XLS+ jet is a midsize jet that can take off from a 3,560 foot runway, requires a 3,180 foot landing distance, and has a maximum operating altitude of 45,000 feet. In comparison, the King Air 350i turboprop can take off from a 3,300 foot runway; requires a 2,692 foot landing distance; can take off and land on unimproved dirt, gravel, or grass; and has a maximum operating altitude of 35,000 feet. Both the jet and the turboprop have seating for nine passengers and are based out of McGhee Tyson Airport in Knoxville, Tennessee.

Due to the cost associated with the aircraft purchases, we scheduled an audit to determine (1) whether TVA's decision to purchase these aircraft was reasonable compared to aircraft used by other utilities, (2) how the cost and use of the aircraft compared to that of other utilities and industry standards, and (3) whether the use of the aircraft is consistent with applicable laws and regulations.

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1 Audit Report 2016-15408, *Audit of Non-Competed Contracts*, May 23, 2017.

2 Prior to the May 2015 purchase of the Citation XLS+ jet and King Air 350i turboprop, TVA had leased a King Air 350 turboprop from 1995 until 2001 when TVA entered into a new lease agreement for a new (2001) King Air 350. TVA continued to lease the 2001 King Air until 2011 when the aircraft was purchased for $2.8 million. TVA sold the King Air in June 2016 for $1,583,250.

## Applicable Law and Regulations

According to TVA's Office of General Counsel (OGC), TVA is subject to the following federal law and regulations:

- Title 31, United States Code, Section 1344 [31 USC § 1344)], Passenger Carrier Use, allows federal agencies to use funds for the maintenance, operation, or repair of aircraft when "used to provide transportation for official purposes."
- Federal Travel Regulation (FTR), Title 41 Code of Federal Regulations, Chapters 300 through 304 (41 CFR 300-304), implements statutory requirements and executive branch policies for travel by federal civilian employees and others authorized to travel at government expense.

TVA also submits information to the General Services Administration (GSA) under the following federal regulations:

- Federal Aviation Interactive Reporting System (FAIRS) quarterly submission of inventory data and aircraft costs (41 CFR § 102–33.390).
- Senior Federal Travel Report (SFTR) semiannual submission of use of government aircraft (FTR 41 CFR § 301-70.907).

## Applicable TVA Policies and Procedures

We identified two TVA Standard Programs and Processes (SPP) that were in effect during our audit period that addressed roles, responsibilities, and processes involved in using and maintaining TVA's FWA.

- TVA-SPP-22.2 Rev. 3, *Executive Travel*, was effective from May 9, 2013, until September 17, 2015, when it was canceled.
- TVA-SPP-32.04, *TVA Fixed Wing Aircraft*, became effective January 12, 2016, and remained effective through the end of our audit period, February 28, 2017.

Both SPPs include the following statements:

> The mission is to provide fixed-wing air transportation services with the highest level of safety, quality, efficiency, and availability for travel in the most cost-efficient means possible. All factors, such as the wait time, travel time, landing facilities that cannot accommodate commercial aircraft, ground transportation costs, avoidable lodging costs, and similar direct and indirect costs will be considered when selecting a mode of travel.

Both SPPs incorporate TVA Board of Director's Practice No. 10 (approved November 30, 2006), which stated it was appropriate for TVA's Board members[3] to utilize TVA's aircraft for official TVA business purposes although less than half of the Board members in office are allowed to travel simultaneously in the same

[3] TVA has had a nine-member part time board of directors since March 2006.

aircraft. The Board Practice does not provide a reason for limiting the number of Board members traveling on the same aircraft simultaneously. However, both SPPs require the risk associated with an aircraft accident involving multiple key personnel be considered before approving travel. In addition, both SPPs state the TVA Board members, Chief Executive Officer (CEO), and direct reports to the CEO have the role and responsibility of providing a business reason for using the TVA aircraft and determining usage of the plane is economically justified. Finally, both SPPs provide additional responsibility to the FWA department/Senior Program Manager, to determine whether usage of the FWA is economically justified.

During the first 2½ months of the audit period (July 1, 2015, through September 17, 2015), all SPPs associated with accounting for travel, including FWA travel (TVA-SPP-22.2), were the responsibility of Financial Services even though the Aviation Services department was under another organization. However, the responsibility for all aspects of FWA travel moved to the organization where the Aviation Services department was located with the implementation of Governance, Oversight, Execution, and Support (GOES).[4] Therefore, Shared Services (Supply Chain) was responsible for the second FWA SPP in effect from January 12, 2016, to present (TVA-SPP-32.04).

In addition, TVA-SPP-13.022, *Travel*, which provides guidance and instructions to employees related to travel expense management and reimbursement, references 41 CFR Chapters 300-304 of the FTR in the requirements section of the SPP.

**Aircraft Usage**

TVA utilizes Business Aircraft Records and Tracking (BART) aviation software to record scheduled flights and generate itineraries for passengers as well as record actual flight information from the pilots' flight sheets.[5] According to the BART data, during the period July 1, 2015, through February 28, 2017, (609 days), at least one of the aircraft flew on 335 different days, and both aircraft flew on 165 of those days.

During the 335 days flown, there were a total of 1,389 flight legs,[6] and 1,086 of the 1,389 flight legs had passengers (78.19 percent). The BART data showed the 303 flight legs without passengers were typically trips when the aircraft returned to Knoxville empty and then went back to pick up passengers either later the same day, the next day, or several days later, or to take the aircraft for service and maintenance. As shown in Table 2 on the following page, 232 different passengers rode on the aircraft.

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4 GOES is an application of governance used to clearly define who is responsible for governance, oversight, execution, and support for each of TVA's core functions.

5 Flight sheets were manually completed by the pilots with the following information: flight date, departure airport, arrival airport, actual departure time, actual arrival time, actual time in air, and Hobbs meter readings.

6 A flight "leg" is each time the aircraft takes off and lands. A flight from Knoxville to Memphis could have multiple flight "legs" (e.g., Knoxville to Chattanooga, Chattanooga to Huntsville, Huntsville to Nashville, Nashville to Memphis).

| Passenger | Number |
|---|---|
| TVA Board Member | 9 |
| CEO or Direct Report | 11 |
| TVA Police | 5 |
| Senior Vice President | 10 |
| Vice President | 30 |
| TVA employees | 120 |
| Spouses | 9 |
| Other nonemployees | 38 |
| **Total** | **232** |

**Table 2**

During the 20-month audit period (July 1, 2015, through February 28, 2017), 19 TVA employees or Board members (8.2 percent of the 232 passengers) flew 20 days or more (an average of 1 day per month). This analysis was based on the number of days the individual flew rather than the number of flight legs the individual flew during a day. A summary of the days flown by these 19 individuals showed:

- Four individuals flew more than 100 days with the highest number of days flown being 132.
- One individual flew 89 days.
- Nine individuals flew more than 30 days but less than 60 days.
- Five individuals flew more than 20 days but less than 30 days.

We also noted 9 spouses (3 Board members' spouses and 6 TVA employees' spouses) flew a total of 30 days during the audit period. One spouse flew 18 days, 4 spouses flew 2 days each, and the remaining 4 spouses flew only 1 day each. See Appendix B for a summary of flight information for the 19 individuals and 1 spouse who flew the most number of days during the audit period.

**Recent Purchase of Additional Jet**

TVA purchased a second new Cessna Citation XLS+ midsize jet in July 2017 (for $10.6 million) and plans to dispose of the turboprop purchased for $6.5 million in May 2015. The justification provided by TVA for the upgrade to the jet from a turboprop stated the jet (1) has an excellent performance record, (2) normally cruises at 41,000 feet with less turbulence, (3) is manufactured to the same high performance standards as a passenger airliner, (4) has a better takeoff performance than a King Air turboprop, (5) is 43 percent faster resulting in executive time savings and less hours flown per year, (6) standardizes the fleet, and (7) reduces training costs because pilots must only train to fly one type of aircraft. (Note: The purchase of the second jet was outside the scope of our audit; therefore, no additional audit work concerning the purchase of the second jet was performed.)

# OBJECTIVES, SCOPE, AND METHODOLOGY

We scheduled an audit of TVA's FWA after a recent OIG audit of non-competed contracts noted TVA purchased two new FWA through sole source contracts in May 2015. Our audit objectives were to determine (1) whether TVA's decision to purchase these aircraft was reasonable compared to aircraft used by other utilities, (2) how the cost and use of TVA's FWA compared to that of other utilities and industry standards, and (3) whether the use of TVA's FWA is consistent with applicable federal laws and regulations. Our audit scope included all flight legs by both aircraft between July 1, 2015, and February 28, 2017. A complete discussion of our audit objectives, scope, and methodology is included in Appendix A.

# FINDINGS AND RECOMMENDATIONS

We were unable to obtain benchmarking information about the cost and use of FWA for other utilities. However, we were able to obtain the number and type of FWA registered to eight of TVA's peers as of March 2017.[7] In summary:

- One utility peer had only 1 midsize jet.
- One federal power marketing administration that has a larger geographic service area than TVA (Bonneville Power Administration) had two King Air turboprops.
- The other six utilities had fleets consisting of three or four midsize to long range jets. All six had larger geographic areas than TVA when the parent company's lines of business were considered (i.e., coast to coast, separate regions of North America, or overseas locations).

Although the number of FWA in TVA's fleet is generally comparable to the number of FWA maintained by eight of its peers, we determined:

- TVA's stated justifications for sole sourcing the purchase of the aircraft (capable of carrying nine passengers and landing within a 4,000 foot runway) were not supported by analytical cost, safety, reliability, or time efficiency documentation and were not consistent with how the aircraft have been used.
- The purchase of a jet instead of a second turboprop has not been cost effective because, in addition to the higher purchase price for the jet, (1) the turboprop has a lower operating cost, and (2) the time savings for use of the jet compared to the turboprop are negligible based on TVA's usage.

Additionally, (1) TVA may not have complied with 31 USC § 1344(a)(1), and (2) TVA did not comply with various federal regulations and TVA policies and procedures regarding use of the aircraft.

[7] We obtained the FWA information from the National Business Aviation Association system.

# SOLE SOURCE JUSTIFICATIONS WERE NOT SUPPORTED WITH ANALYTICAL DOCUMENTATION OR CONSISTENT WITH ACTUAL USAGE

According to TVA's former Vice President of Supply Chain and Facilities, the decision to purchase new aircraft was based on the need to upgrade the existing aircraft due to its age, the limitations of the older technology, increased use, and the need for greater capacity. He stated a single aircraft was insufficient to meet the transportation needs of TVA employees, executives, and board members so a "small jet" was sought because it could fly faster at a higher, safer altitude and could land on runways as short as 4,000 feet.

We requested copies of all documentation TVA prepared to support the business justification for the 2015 aircraft purchases. However, the only justification we received (other than the sole source documents required to make the purchase) were two informal documents prepared after the aircraft were purchased. TVA was not able to provide documentation of any cost, safety, reliability, or time efficiency comparisons prepared prior to the purchases.

As discussed below, TVA's stated justifications for sole sourcing the purchase of the aircraft (capable of carrying nine passengers and landing within a 4,000 foot runway) were not supported by analytical cost, safety, reliability, or time efficiency documentation and were not consistent with how the aircraft have been used.

### Sole Source Justifications Were Not Supported by Analytical Documentation

The justifications stated in the sole source procurement documents for the turboprop and jet were similar:

- The 350i aircraft is the only turboprop capable of carrying nine passengers and landing within the 4,000 foot runway specification. Many of the fields in use in the TVA service area are short fields. Larger aircraft require significantly more runway.
- The XLS aircraft is the only jet capable of carrying nine passengers and landing within the 4,000 foot runway specification. Many of the fields in use in the TVA service area are short fields. Larger aircraft require significantly more runway.

It is unclear how TVA determined the need to purchase (1) two aircraft instead of one, (2) a turboprop and a jet instead of two turboprops, or (3) two aircraft that were able to carry nine passengers and land on a 4,000 foot runway. TVA did not provide documentation of (1) any analyses that might have been performed to determine what was needed or (2) how it determined that only the Beechcraft King Air 350i turboprop and the Cessna 560XL Citation XLS+ jet would meet its specifications. Without this analytical cost, safety, reliability, and time efficiency comparison documentation, the stated reasons for not obtaining competitive bids when purchasing the aircraft were not valid reasons for sole sourcing the

purchases because other aircraft may have been available that would have met the specified criteria. As a result, TVA may not have obtained the aircraft at the best available price.

**Aircraft Specifications Not Consistent With Actual Usage**

Because TVA did not provide documentation showing historical usage analysis was performed before determining the need for the aircraft, we reviewed TVA's actual usage of the aircraft after they were purchased. According to the BART data, from July 1, 2015, through February 28, 2017, there were 93 different departure[8] and arrival airports. Of these 93 different airports, 41 were "out-of-valley" and 52 were "in-valley" airports. We analyzed the BART flight data for the two aircraft to determine how many flight legs (1) had nine passengers, or (2) landed on a 4,000 foot runway. As shown in Table 3:

- 2 flight legs had 9 passengers (0.1 percent of all 1,389 flight legs), and both of these flight legs were for an economic development trip to Morganton, North Carolina.
- 154 flight legs had 5 to 8 passengers (11.1 percent of all 1,389 flight legs).
- 930 flight legs had 1 to 4 passengers (67.06 percent of all 1,389 flight legs).
- 303 flight legs had no passengers (21.8 percent of all 1,389 flight legs).

| Number of Passengers | Total Flight Legs | Percentage of Total Flight Legs |
|---|---|---|
| 9 | 2 | 0.1% |
| 8 | 10 | 0.7% |
| 7 | 20 | 1.4% |
| 6 | 51 | 3.7% |
| 5 | 73 | 5.3% |
| 4 | 129 | 9.3% |
| 3 | 212 | 15.3% |
| 2 | 312 | 22.5% |
| 1 | 277 | 19.9% |
| 0 | 303 | 21.8% |
| **Total** | 1,389 | 100.00% |

**Table 3**

The majority of airports TVA utilized had runways longer than 4,000 feet with only 3 of the 93 airports having runways at or near 4,000 feet in length. Of these 3 airports, 2 were "in-valley" and 1 was "out-of-valley." Having the ability to land on a 4,000 foot runway at these 3 airports is no longer necessary because (1) the "out-of-valley" airport also has a runway that is over 5,000 feet; (2) the runway on one of the "in-valley" airports was lengthened during the audit period and is now more than 5,000 feet; and (3) according to TVA's senior pilot, the other "in-valley" airport is no longer used because there is another airport with a 5,000 foot runway about 20 miles away. (We verified there were no flights to the "in-valley"

[8] We did not include a flight leg from Wichita, Kansas, to Knoxville, Tennessee, because this was the trip where TVA picked up the jet.

airport with the 4,000 foot runway after November 2015. Also, there were 4 flights between July 2016 and February 2017 to the nearby airport with a 5,000 foot runway.)

Based on the flight data, the aircrafts' usage does not support the justifications given for the sole source FWA purchases—the need to carry nine passengers and land on a 4,000 foot runway.

**Recommendation** – We recommend TVA's Senior Vice President, Resources and River Management:

1. Provide valid justifications for future sole source aircraft procurements, and require supporting documentation for the justification(s) given, such as analysis of actual aircraft usage.

**TVA Management's Comments** – TVA management disagreed with our finding and stated the determination to purchase the aircraft on a sole source basis was reasonable and within the discretion of those authorized to make those decisions. Also, management stated TVA properly considered pertinent factors, including negotiated savings off market value, aircraft safety, experience with TVA's past demand and usage of aircraft, and other aircraft capabilities to meet TVA's needs.

Although management disagreed with our finding, they plan to ensure that TVA's Supply Chain processes adequately justify, support, and document sole source procurements in a manner which ensures the consideration of all aircraft lifecycle costs and requirements. See Appendix C for management's complete response.

**Auditor's Response** – While we agree that the determination to purchase the aircraft by sole source procurement was within the discretion of those authorized to make the decision, no evidence of analytical documentation prepared prior to the aircraft purchases was provided. Specifically, TVA was unable to provide any documentation indicating comparisons of cost, safety, or other aircraft capabilities or analysis of historical usage was performed prior to the aircraft purchases.

Although TVA management stated future sole source procurements will consider all aircraft lifecycle costs and requirements, management did not indicate if analysis of actual aircraft usage would be performed, which we believe would help identify the number and type of FWA needed.

## PURCHASE OF A JET WAS NOT COST EFFECTIVE

TVA paid $11,211,762 to purchase its jet and $6,457,675 to purchase its turboprop. Because data was not available to compare the cost and use of TVA's FWA to its peers, we attempted to determine the cost effectiveness of TVA's decision to purchase a jet rather than a second turboprop aircraft.

As discussed in the background section of this report, TVA's contract approval documentation stated each aircraft met TVA's need for aircraft that could carry nine passengers and land within a 4,000 foot runway. The documentation also stated each aircraft met TVA's need for safe, reliable, time-efficient transportation of TVA Board members, executives, and employees. We found that industry documentation supported TVA's statements regarding the safety of each aircraft. Therefore, we focused our analysis on a comparison of the operating costs and time savings for the jet versus the turboprop. In addition to the higher purchase price for the jet, we determined (1) the turboprop has a lower cost to operate than the jet, and (2) the time savings for the jet compared to the turboprop are negligible based on TVA's usage.

**Turboprop Has a Lower Cost to Operate**

To compare the costs for operating the turboprop with the jet, we obtained the hourly cost rates for each of TVA's aircraft from TVA's Aviation Services personnel. The hourly rates entered into BART by Aviation Services as of April 2017 were $4,542 per flight hour to operate the jet and $2,249 per flight hour to operate the turboprop. However, TVA's Aviation Services was unable to provide supporting documentation indicating the various costs and calculations used to determine each aircraft's hourly rate and we could not confirm the validity of the hourly rates TVA entered into BART.

Because we could not validate the hourly rates provided by Aviation Services, we reviewed technical articles, brochures, and websites[9] comparing the cost of operating the two types of FWA TVA owns. According to all information reviewed and substantiated by TVA's reported hourly operating cost for each aircraft, a turboprop has a lower variable hourly cost compared to a midsize or light-size jet.[10] Specifically, industry standard technical information stated the turboprop is more fuel efficient. We calculated the average gallons of fuel used per hour for each aircraft based on methods from four different industry standard technical Web sites and determined the averages to be 228 gallons per hour for the jet and 122 gallons per hour for the turboprop.

According to the BART data, flights from Knoxville to Memphis, Tennessee, were about 375 miles,[11] and flights from Knoxville to Washington, D.C., were between 450 and 475 miles, depending on which airport was utilized. In addition to being more fuel efficient for flights within TVA's service area, the turboprop is also capable of flying to locations outside of TVA's service area. According to the company which manufactures both aircraft, the range for each aircraft carrying four passengers is 1,706 miles for the turboprop and 1,854 miles for the jet.

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9 A total of eight articles, two brochures, and five Web sites specifically comparing the two types of aircraft TVA owns were reviewed.

10 According to the Conklin and de Decker Web site (https://www.conklidd.com/), as of May 2017, the hourly variable cost for TVA's types of aircraft was $1,212 for the turboprop and $1,852 for the jet.

11 For aircraft, distance is measured in nautical miles. A nautical mile is the unit of distance used for sea and air navigation based on the length of a minute of arc of a great circle of the earth and differing because the earth is not a perfect sphere (https://www.merriam-webster.com/dictionary/nautical%20mile). In this report, we refer to "nautical miles" as "miles."

**Time Savings for a Jet Are Negligible Based on TVA's Usage**

Data obtained from BART indicates time savings are negligible for flying a midsize or light-size jet rather than a turboprop for shorter distances, such as distances less than 600 miles, which account for more than 95 percent of TVA's flights. Information in the same articles and Web sites mentioned above corroborate that analysis. The BART data showed that for trips to the farthest airport to which both aircraft flew (approximately 700 miles to West Palm Beach, Florida), the jet had an average time savings of less than 30 minutes compared to the turboprop. In addition, the BART data shows that flights less than 300 miles had a time savings of about 10 minutes or less. As shown in Table 4, the vast majority of all flight legs (77 percent) were less than 300 miles.

| Distance of Flight Legs | Number of Flight Legs | Percentage of Total Flight Legs |
|---|---|---|
| >1,000 miles | 5 | 0.4% |
| 700 to 999 miles | 27 | 1.9% |
| 600 to 699 miles | 33 | 2.4% |
| 500 to 599 miles | 37 | 2.7% |
| 400 to 499 miles | 73 | 5.2% |
| 300 to 399 miles | 145 | 10.4% |
| 200 to 299 miles | 308 | 22.2% |
| 100 to 199 miles | 704 | 50.7% |
| 0 to 99 miles | 57 | 4.1% |
| **Total** | **1,389** | **100.0%** |

**Table 4**

In summary, the turboprop is more cost efficient and capable of meeting TVA's flight needs due to its lower purchase price, lower operating cost, and the fact that more than 95 percent of TVA's flights were less than 600 miles. We discussed the process TVA utilized to purchase the FWA in May 2015 with TVA's OGC. Although OGC stated TVA is not required to submit a business case for the acquisition of aircraft to the Office of Management and Budget (OMB), OGC agreed that completing analyses similar to OMB Circular A-11, *Business Case for Acquisition of Aircraft,* would be considered a best practice.[12]

**Recommendation** – We recommend TVA's Senior Vice President, Resources and River Management:

2. Prior to purchasing aircraft in the future, perform analyses similar to that required by OMB Circular A-11, *Business Case for Acquisition of Aircraft*, to ensure a standardized methodology that considers all aircraft lifecycle costs is utilized. Maintain all documentation, including all supporting documentation, in accordance with TVA's record retention policy.

**TVA Management's Comments** – TVA management stated the OIG's analysis focused solely on cost effectiveness, and the OIG's review suggested a turboprop

[12] OMB Circular A-11 and 41 CFR § 102-33.70 require most agencies to submit a business case for the acquisition of aircraft. According to OGC, TVA is exempt from this requirement.

is more appropriate for TVA's needs. Management stated they disagreed because the additional costs associated with purchasing and operating a jet were deemed acceptable to improve the margin of safety for pilots and passengers. Management also stated the operating cost per mile is approximately 7 percent greater for the jet, which TVA considers negligible when compared to the gains in safety.

Although management disagreed with our finding, they stated TVA will perform, as appropriate, analysis similar to that found in OMB Circular A-11. See Appendix C for management's complete response.

**Auditor's Response** – As discussed in our report, TVA's documentation stated each aircraft met TVA's need for safe, reliable, time-efficient transportation of TVA Board members, executives, and employees. Since both aircraft were determined to have met TVA's requirements for safety, reliability, and time efficiency, we compared the operating costs and time savings for the jet versus the turboprop. In addition to the higher purchase price for the jet, we determined (1) the turboprop has a lower cost to operate than the jet, and (2) the time savings for the jet compared to the turboprop are negligible based on TVA's usage.

Although TVA management stated the operating cost per mile is approximately 7 percent greater for the jet, our analyses found TVA's average cost per mile was 18 percent higher for the jet. TVA's lower percentage resulted because TVA's calculation was based on a 600-mile flight which would result in lower operating costs for a jet. However, during our audit period, less than 5 percent of TVA's flights were 600 miles or more. When using TVA's historical flight data for all flights, the operating cost for the jet increases to 18 percent more than the turboprop.

TVA management did not address our recommendation for maintaining supporting documentation.

## NONCOMPLIANCE WITH 31 USC § 1344(a)(1), FEDERAL REGULATIONS, AND TVA POLICIES AND PROCEDURES

We tested TVA's compliance with laws, regulations, and specific requirements in the SPPs by performing analytical reviews of flight data and selecting a random sample of 39 "out-of-valley" passenger flight legs[13] applicable to 20 individuals. Based on our review, (1) TVA may not have complied with 31 USC § 1344(a)(1), and (2) TVA did not comply with various federal regulations and TVA policies and procedures regarding use of the aircraft. Specifically:

- Cost comparison analyses prior to use of FWA were not performed.
- Business justifications prior to use of FWA were not documented.

[13] A passenger flight leg is one passenger on one flight leg. Although there were 1,086 different flight legs with passengers, when counting all passengers on each flight leg, there are 2,962 passenger flight legs.

- Authorizations prior to use of FWA were not obtained.
- Some aircraft usage appeared to be for the personal preference and convenience of TVA's CEO, including flights to/from his second personal residence that is located outside the TVA service area.
- Periodic reporting on the cost and use of the aircraft to GSA has been inaccurate and incomplete.

As discussed in detail below, failure to follow the federal laws and regulations (1) prevents TVA from being able to accurately determine the need for owning aircraft, (2) prevents TVA from ensuring travel costs are managed effectively, and (3) may cause reputational risks for TVA with regard to misuse (or perceived misuse) of the aircraft.

**Cost Comparison Analyses for Use of FWA Were Not Performed**
The FTR states generally passengers may travel on government aircraft only when a government aircraft is the most cost-effective mode of travel. However, we found TVA was not preparing cost comparison analyses to determine/document whether traveling on the TVA aircraft was the most cost-effective mode of travel.

Title 41 CFR § 301-70.801 states a traveler may use government aircraft for official travel only when:

1. No scheduled commercial airline service is reasonably available to fulfill your agency's travel requirement (i.e., able to meet your departure and/or arrival requirements within a 24-hour period, unless you demonstrate that extraordinary circumstances require a shorter period), or

2. The cost of using a government aircraft is not more than the cost of the city-pair fare for scheduled commercial airline service or the cost of the lowest available full coach fare if a city-pair fare is not available to you.

Additionally, 41 CFR § 301-70.802 states the agency must ensure that travel on a government aircraft is the most cost-effective alternative that will meet the travel requirement and the designated travel approving official must:

1. Compare the cost of all travel alternatives, as applicable, that is:

    i. Travel on a scheduled commercial airline
    ii. Travel on a federal aircraft
    iii. Travel on a government aircraft hired as a commercial aviation service
    iv. Travel by other available modes of transportation

2. Approve only the most cost-effective alternative that meets the agency's needs.

Title 41 CFR § 301-10.4 of the FTR goes on to state agencies must select the method most advantageous to the government, when cost and other factors[14] are considered.

To determine if TVA performed the required cost comparisons, we requested the 20 individuals in our sample send us the cost analysis performed prior to their "out-of-valley" flight. Only 1 individual (an employee) provided the cost comparison analysis prepared prior to use of the aircraft. The provided analysis estimated the cost to transport five TVA employees in three automobiles rather than the FWA and five hotel rooms for an overnight stay as well as lost productive hours for the employees. However, the cost of the travel by automobile was not compared to the cost associated with using the TVA FWA. Of the remaining 19 individuals in the sample:

- Ten individuals (9 senior executives and 1 Board Member) stated it was the best use of executives' time.
- Five individuals (3 executives and 2 employees, all in Financial Services) stated it was Aviation Services' role to determine whether usage of the FWA is economically justified.
- Three individuals (2 executives and 1 employee) stated a cost comparison was not requested or provided.
- One individual (an employee) stated the trip was for an Economic Development project resulting in the creation of 1,700 to 2,000 well-paying new jobs.

In addition, our analysis of all flight data for the audit period noted that half of the flight legs (704 of the 1,389 flight legs) were between 100 and 199 miles. This included 129 flight legs exclusively between Knoxville and Chattanooga, Tennessee. According to the BART data, flight time between Knoxville and Chattanooga averaged 34 minutes. Based on TVA's self-reported operating cost of $4,542 per flight hour for the jet and $2,249 per flight hour for the turboprop, a one-way trip from Knoxville to Chattanooga cost about $2,574 for the jet and $1,274 for the turboprop. It also takes a minimum of 24 minutes to drive to the Knoxville airport from TVA's offices in downtown Knoxville and a minimum of 20 minutes to drive from the Chattanooga airport to TVA's offices in downtown Chattanooga. In comparison, the total travel time (flight time and drive time) between TVA's Knoxville and Chattanooga offices would be a minimum of 1 hour, 18 minutes, and the minimum drive time between the two locations is 1 hour, 44 minutes, which is 26 minutes longer than traveling using TVA aircraft. Therefore, the cost for using the aircraft for short trips is significantly greater than the cost of driving, which may negate any minimal time savings.

[14] Other factors identified in 41 CFR § 301-10.4 were energy conservation, total cost to the government (including costs of per diem, overtime, lost worktime, and actual transportation costs), total distance traveled, number of points visited, and number of travelers.

TVA's current travel SPP (TVA-SPP-13.022 Rev. 0014) specifically incorporates the FTR (41 CFR Part 301-304). The versions of this travel SPP in effect during the majority of the audit period (Revs. 0010 and 0011) stated employees are responsible for "planning travel to incur cost that is reasonable." However, in October 2016, the travel SPP (TVA-SPP-13.022 Rev. 0012) was updated for clarification and now states employees are responsible for:

> Exercising the same care in incurring expenses that a prudent person would exercise in traveling on personal business. Employees are responsible for excess costs caused by indirect routes, delays, luxury accommodations, or unnecessary services, and additional expenses incurred for personal preference or convenience, per the FTR § 301-10.8.

We determined no documentation comparing the cost of flying TVA's FWA to the cost of commercial airlines or other available modes of transportation was maintained by TVA's FWA Services (currently Aviation Services). Completing a cost comparison as required by the FTR and TVA's FWA SPP would help ensure the aircraft is utilized only when it is in the best interest of, and advantageous to, TVA rather than for an individual's personal preference and convenience.

**Business Justifications for FWA Use Were Not Documented**

Title 41 CFR § 301-70.805-806 requires several items be documented when the traveler is a senior federal official or a nonfederal traveler. One of these items is the official purpose of the trip. This regulation also requires documentation of the travel authorizations and cost comparisons be retained for 2 years. In addition, both of TVA's FWA SPPs state the aircraft should be used for business purposes (or emergency) and that a business justification/purpose should be provided when requesting to use the aircraft. However, BART does not contain a specific field for recording the business justification and e-mails where individuals requested to schedule flight(s), including the business justification (if given), were not maintained.

TVA-SPP-32.040, *Use of Fixed Wing Aircraft*, specifically states the (1) Board members, CEO, and officers requesting the use of FWA are responsible for providing the business reason for the trip, and (2) Executive Management Assistant to the Executive Vice President and Chief Operating Officer will serve as the designated Scheduler and ensure the SPP is followed. However, the designated Scheduler was on extended leave between July 1, 2015, and February 28, 2017, and TVA did not have a designated backup until May 2017.

**Authorizations for Using TVA's FWA Were Not Obtained**

FTR § 301-10.262 requires all federal travelers other than senior federal officials to have (1) authorization for travel on government aircraft, in advance and in writing from their designated travel-approving official, or (2) a blanket travel authorization for official travel that authorizes travel on government aircraft. This blanket authorization must define the circumstances that must be met for using

government aircraft and must comply with the FTR and any additional agency policies. Travel on government aircraft that does not meet the circumstances specified in the blanket travel authorization must be authorized on a trip-by-trip basis in accordance with the FTR and other applicable agency policies.

Senior federal officials and nonfederal travelers must receive authorization from the agency's senior legal official or his/her principal deputy for all travel on government aircraft in advance and in writing, except for required use travel. When we requested documentation supporting approval and business justification for flights in our sample, no written pre-authorizations from TVA's senior legal official were provided.

**Some Aircraft Usage Appeared to Be for the Personal Preference and Convenience of TVA's CEO**

Under the FTR and 31 USC § 1344, travel to and from locations other than official duty stations and diversion of government aircraft from the most direct route for personal preference, convenience, or other personal reasons do not qualify as official government travel. We noted 13 days where TVA's FWA appeared to be used for the personal preference and convenience of TVA's CEO. The flights on these days included (1) travel to/from the CEO's city of a second personal residence (Raleigh, North Carolina) to the CEO's official duty station (Knoxville, Tennessee); (2) stopping at the city of the CEO's second personal residence to pick up/drop him off on the way to/from other locations; and (3) stopping in Pittsburgh, Pennsylvania, to drop off the CEO on a flight that took other TVA employees from Knoxville, Tennessee, to Charleston, West Virginia, to Washington, D.C. We also noted the CEO's spouse accompanied him on 3 of these dates.

When we inquired about these flights, TVA's response stated all but one of the flights had a business purpose. The one flight TVA identified as personal occurred when the CEO's spouse had a medical issue at a second personal residence in Raleigh, North Carolina, and the CEO was in Memphis, Tennessee, on TVA business. The CEO flew on the TVA jet from Memphis to Raleigh to assist his spouse rather than flying back to his official duty station. TVA stated this trip was approved by the then TVA Board Chair, and the Chair confirmed his approval of the trip in question. However, we were unable to identify any Board Practice or other document that gave the Chair the authority to approve this use of TVA's FWA.

None of the other reasons given for diverting the aircraft from the most direct route to the final destination to pick up or drop off the CEO were for official government reasons. Rather, they appeared to be for the convenience of the CEO who was either already at his second personal residence in Raleigh, North Carolina, rather than his official duty station or was being dropped off at the location of his second residence or elsewhere for personal reasons rather than continuing to his official duty station.

Law and Regulations Regarding Travel – 31 USC § 1344 and 41 CFR § 301 include the following requirements:

- 31 USC § 1344(a)(1) states "Transporting any individual other than the individuals listed in subsections (b) and (c)[15] of this section between such individual's residence and such individual's place of employment is not transportation for an official purpose."
- 41 CFR § 301-70.101(b) states "A determination that another method of transportation is more advantageous to the Government than common carrier will not be made on the basis of personal preference or inconvenience to the traveler."
- 41 CFR § 301-10.7 states "You must travel to your destination by the usually traveled route unless your agency authorizes or approves a different route as officially necessary."
- 41 CFR § 301-10.8 states "Your reimbursement will be limited to the cost of travel by a direct route or on an uninterrupted basis. You will be responsible for any additional costs."
- 41 CFR § 301-10.261 states "You may use Government aircraft — (a) For official travel only …"

OGC Comments Regarding CEO Flights – We discussed the CEO's use of TVA's aircraft with OGC and received the following responses:

- "In reviewing the trips that you highlighted for us, you indicated an interest in instances where you suggested that there might have been a 'commute.' As we understand that term in connection with Federal travel, it is used in connection with 31 U.S.C. § 1344 and regulations issued thereunder, to refer to 'home-to-work transportation.' 41 CFR Pt. 102.5; See TVA SPP 13.022, Travel, § 3.2.2. We have reviewed each of the flights referred to. None involved a 'home-to-work' travel situation. All involved official travel."
- "One trip involved an instance where the CEO was on leave, and TVA interrupted that leave to have him attend to urgent business for TVA."
- "In several instances, the CEO was on leave and located at intermediate points. The TVA plane was proceeding to points further on where the CEO was to perform TVA business. The plane picked up the CEO from the leave location and continued to the business destinations."

We reviewed data in TVA's timekeeping system and noted that no leave of any type was recorded for the CEO during the audit period.

[15] Specific individuals are listed in subsection (b) of this legislation including the President and Vice President of the United States, but no TVA employees are listed. Subsection (c) allows the use for any person for whom protection is specifically authorized under the law.

OGC further stated the decisions to make the trips other than the trip for a family emergency appear to be supported by efficiency, cost, and mission requirements. OGC also said these flights enabled TVA to make optimal use of the CEO's work hours, something OGC identified as a very valuable resource. OGC said using the aircraft did this by:

1. Cutting the CEO's travel time by hours on every trip.

2. Eliminating the need to begin travel on days before events.

3. Enabling the CEO to participate in multiple important TVA business events within short time frames.

4. Enabling the CEO to conduct meetings with other TVA executives and staff, engage in work, and prepare for events while in flight.

5. Enabling CEO transport at little incremental cost. In several instances, the TVA plane "picked up" or "dropped off" the CEO on official trips when other TVA personnel were already traveling along concurrent routes.

We noted that several of the stops made to pick up or drop off the CEO were not on the path of travel for the aircraft on its way to its business destination. While OGC stated that the identified flights were in TVA's best interest, no documentation was provided that compared costs of using the TVA aircraft to the costs of using other forms of available transportation.

If any of the travel was for personal reasons (for either the CEO or his spouse), TVA should have imputed fringe benefit income to the CEO for the value of the transportation. In addition, TVA may have been required to report the imputed fringe benefit income in financial report filings with the Securities and Exchange Commission. Based on discussions with TVA's Vice President and Controller, no personal travel by the CEO or his spouse was reported to Corporate Accounting or reported in TVA's financial reports. In addition, the Controller informed us that TVA had no policies in place for reporting personal use of TVA aircraft. We verified no personal travel was reported on the SFTR for fiscal year 2015; however, the 2016 report has not been published as of the date of this report.

**Inaccurate and Incomplete Reporting to GSA**

We found TVA's quarterly and semiannual reporting to GSA for aircraft costs and use of aircraft was inaccurate and incomplete.

- Quarterly Report on Cost of Government Aircraft (41 CFR § 102–33.390) – We observed Aviation Services personnel entering TVA's quarterly information into FAIRS on aircraft costs and noted errors were entered that could not be corrected in the system. In addition, we noted there was no separation of duties because the same person who performed the calculations needed for the required information also entered, reviewed, and approved the data entered.

- Semiannual Report on Use of Government Aircraft (41 CFR § 301-70.907) – TVA submits the SFTR semiannually on use of the aircraft. However TVA is not reporting all required portions of the report. Specifically, only senior federal travelers were reported, and nonfederal travelers were not reported. In addition, similar to FAIRS, there was no separation of duties for entering, reviewing, and approving the information submitted.

**Recommendations** – We recommend TVA's Senior Vice President, Resources and River Management:

3. Develop appropriate costing information for TVA FWA travel.

4. Require cost comparison analyses be performed in compliance with the FTR prior to scheduling of any flights, and maintain analyses documentation in accordance with TVA's record retention policy.

5. Work with OGC to identify all applicable laws for all facets of FWA use and reporting and update TVA SPPs accordingly. Specifically, (a) incorporate the FTR requirements for travel authorizations prior to use of TVA's FWA in the SPPs, and (b) ensure proper authorizations for use of TVA's FWA are obtained for senior federal officials and nonfederal travelers in advance and in writing.

6. Enforce the requirement that all use of TVA aircraft be for official business; document the business purpose and approval for each flight; and maintain the documentation, in accordance with TVA's record retention policy, either in BART or some other media. In the case of any waivers, ensure (a) approval is documented and maintained, and (b) all proper internal and external reporting of personal usage occurs.

7. Assign the scheduling role to a dedicated individual to provide consistency in applying and documenting SPP requirements (e.g., business justification, combination of allowed passengers) as well as entering information into BART for the scheduled flight, and maintain all information associated with scheduling each flight in accordance with TVA's record retention policy.

8. Update TVA-SPP-32.04 to (a) reference applicable sections of FTR (41 CFR § 300-304) and 31 USC § 1344, and provide guidance on requirements of government aircraft usage, and (b) include requirements for reporting personal usage of TVA's FWA internally and externally as required by laws and regulations.

9. Ensure TVA complies with the federal requirements for reporting (a) FAIRS information quarterly by including complete and accurate cost information, and (b) SFTR information semiannually by including nonfederal travelers. Also, maintain supporting documentation in accordance with TVA's retention policy.

10. Implement separation of duties, and update the SPP, as appropriate, so one person does not enter, review, and approve information submitted for FAIRS and SFTR.

**TVA Management's Comments** – TVA management stated they agreed that flight recordkeeping and reporting was inadequate, and the poor recordkeeping contributed to the questions raised by the audit. However, management stated they had determined that all of the flights identified in the audit qualified as official travel under applicable regulations, none of the flights identified involved a violation of statute, and no traveler engaged in a knowing or intentional infringement of any law or regulation.

In response to our specific recommendations, TVA management stated:

- TVA will coordinate with the OGC to revise TVA-SPP-32.040 to ensure compliance with FTR and other pertinent legal guidelines. The SPP will include guidance on:
  - Requirements for government use.
  - Documentation of official business use.
  - Approvals in reference to the applicable FTR and statutes.
  - Appropriate costing information for TVA aircraft travel.
  - Cost analyses when required.
  - Preauthorizations.
  - Retention.
  - Waiver, waiver approval, and waiver and mission documentation.
  - Personal usage reporting requirements.
  - Segregation of duties for FAIRS and SFTR reporting.
- TVA will implement accounting procedures consistent with the FTR in the event that incremental costs are incurred due to routing choices exercised during the course of official travel.
- TVA will be evaluating new flight information software that will replace BART to improve documentation, recordkeeping, and reporting, such as appropriate justifications, authorizations, and approvals.
- TVA will increase Aviation Services oversight and take measures to assign the scheduling role in a manner that supports compliance and consistency with SPP and federal reporting requirements. Specifically, a procedure will be developed for a periodic review of flight activity by organizations outside of Aviation Services.
- TVA will disclose travelers consistent with the FTR and statutory provisions protecting confidentiality.

- TVA will establish a process to ensure that review outside of Aviation Services determines when exemptions should be applied in accord with those statutes.

See Appendix C for management's complete response.

**Auditor's Response** – While we acknowledge that we did not find evidence that any TVA traveler knowingly or intentionally infringed on any law or regulation, there was little or no contemporaneous documentation to support that all trips identified in our audit were for official business. Accordingly, there is still an appearance that several flights may not have complied with 31 USC § 1344(a)(1), applicable federal regulations, and TVA's SPPs even after considering TVA's explanations.

# OBJECTIVES, SCOPE, AND METHODOLOGY

Our audit objectives were to determine (1) whether the Tennessee Valley Authority's (TVA) decision to purchase these aircraft was reasonable compared to aircraft used by other utilities, (2) how the cost and use of TVA's fixed-wing aircraft (FWA) compared to that of other utilities and industry standards, (3) whether the use of TVA's FWA is consistent with applicable laws and regulations. Our audit scope included all flight legs taken on TVA's FWA between July 1, 2015, and February 28, 2017.

To achieve our objectives, we:

- Obtained FWA purchase agreements, TVA Form 17388 – Request for Approval of Sole Source, Emergency, or Changes to Contract Actions and TVA Form 20496 – Supply Chain Review/Concurrence Sheet, for both the Beechcraft King Air 350i and Cessna 560XL Citation XLS+.
- Reviewed National Business Aviation Association to obtain available aircraft inventory, cost, and usage information for TVA's peers to use for comparison to TVA.
- Obtained TVA information submitted to the Federal Aviation Interactive Reporting System (FAIRS) and any publicly available FAIRS information for other federal agencies to use for comparison to TVA.
- Obtained Senior Federal Travel Report (SFTR) information submitted to General Services Administration by TVA and any publicly available SFTR information for other federal agencies to use for comparison to TVA.
- Reviewed technical articles, brochures, and Web sites to compare usage, costs, and safety ratings of turboprops as compared to jets.
- Obtained TVA flight data including dates, airport locations of flight legs (departure and arrival), take-off and landing times of flight legs, passengers, duration of flight legs, distance of flight legs, and approver of flight for each aircraft, and any available cost information for the audit period from the Business Aircraft Records and Tracking (BART) aviation Web-based flight scheduling software used by TVA.
- Performed analytical review of all BART data during the audit period to identify any outliers in aircraft usage.
- Purchased available flight data from FlightAware for our audit period and used that data to validate the accuracy and completeness of data obtained from TVA's BART system.
- Reviewed BART FWA passengers who traveled during the audit period to determine if they were employees or nonemployees (e.g., Board members, executives, nonexecutives or government officials, spouses, or other).
- Reviewed any available cost information provided by TVA's Aviation Services or obtained through TVA's Cognos reporting system to determine if the hourly operating rate for each aircraft could be recalculated.

- Reviewed TVA policies and procedures including Board Practices effective during the audit period for administering, using, and monitoring TVA's FWA along with any other applicable information.
- Reviewed laws and regulations that pertain to usage and cost of FWA to determine which were applicable to TVA.
- Consulted with Office of the General Counsel and requested a list of laws and regulations applicable to TVA's aircraft as well as any documentation TVA had submitted requesting exemption from selected laws or regulations and any additional reporting information TVA was voluntarily submitting.
- Selected a random sample of 39 "out-of-valley" passenger flight legs (using a random number generator) taken by 20 individuals from the population of 175 "out-of-valley" passenger flight legs due to these flights being of higher risk of not having a business purpose/justification than "in-valley flights." We obtained and reviewed supporting documentation provided to test compliance with the requirements in the effective Standard Programs and Processes (SPP) as well as the accuracy of the BART data. Because this was intended to be a judgmental sample, we did not project the results to the population.
- Requested confirmation or correction of the following pertinent information, either required by the applicable SPP or listed in BART for the random sample of 39 "out-of-valley" flight legs:
  - Date and times of flight
  - Aircraft flown
  - Departure and arrival airports
  - Person who approved the flight, when applicable
  - Business justification/purpose of the trip
  - Cost comparison analysis performed prior to the flight(s) indicating that flying on TVA's FWA rather than a commercial flight was in TVA's best interest
  - Passengers listed were correct, indicate which passengers listed were not on the flight, or add any passengers that were on the flight but not listed
- Compared the passenger list for the random sample of 39 "out-of-valley" flight legs to the allowed passenger restrictions listed in the SPPs to determine if the combination of passengers were in compliance with the SPP.

We did not identify internal controls significant to our audit objectives; therefore, internal controls were not tested as part of this audit. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

# SUMMARY OF FLIGHTS FOR TVA BOARD MEMBERS, EMPLOYEES, AND ONE SPOUSE WHO FLEW THE MOST DAYS DURING AUDIT PERIOD

| Title | No. of Days Flown | Percent of Total Days Flown (335) | No. of Days on Turbo | No. of Days on Jet | No. of Different Airports | No. of Airports "In-Valley" | No. of Airports "Out-of-Valley" |
|---|---|---|---|---|---|---|---|
| President/CEO | 132 | 39.40% | 22 | 110 | 46 | 27 | 19 |
| TVA Police | 115 | 34.33% | 75 | 43*** | 34 | 19 | 15 |
| CEO Direct Report | 111 | 33.13% | 71 | 42** | 33 | 18 | 15 |
| Vice President (VP) | 109 | 32.54% | 25 | 85* | 41 | 27 | 14 |
| TVA Police | 89 | 26.57% | 14 | 75 | 38 | 22 | 16 |
| CEO Direct Report | 55 | 16.42% | 21 | 34 | 19 | 13 | 6 |
| Senior VP | 54 | 16.12% | 51 | 4* | 19 | 19 | 0 |
| Board Member | 54 | 16.12% | 12 | 43* | 24 | 19 | 5 |
| CEO Direct Report | 47 | 14.03% | 13 | 34 | 19 | 12 | 7 |
| Board Member | 44 | 13.13% | 5 | 40* | 19 | 19 | 0 |
| CEO Direct Report | 42 | 12.54% | 25 | 17 | 15 | 9 | 6 |
| Board Member | 35 | 10.45% | 3 | 33* | 14 | 14 | 0 |
| CEO Direct Report | 34 | 10.15% | 22 | 12 | 21 | 15 | 6 |
| Board Member | 30 | 8.96% | 20 | 11* | 16 | 16 | 0 |
| Board Member | 29 | 8.66% | 1 | 28 | 14 | 14 | 0 |
| Board Member | 26 | 7.76% | 18 | 8 | 11 | 11 | 0 |
| Board Member | 25 | 7.46% | 19 | 6 | 14 | 14 | 0 |
| TVA Police | 23 | 6.87% | 7 | 16 | 12 | 11 | 1 |
| Board Member | 21 | 6.27% | 16 | 5 | 9 | 9 | 0 |
| Spouse of CEO | 18 | 5.37% | 3 | 15 | 10 | 1 | 9 |

* Passenger on both planes on 1 day.
** Passenger on both planes on 2 days.
*** Passenger on both planes on 3 days.

March 26, 2018

David P. Wheeler, ET 3C-K

REQUEST FOR COMMENTS – DRAFT AUDIT 2017-15470 – TVA'S FIXED-WING AIRCRAFT

Thank you for the opportunity to review and respond to the subject draft report. As discussed with you on January 8, 2018, TVA has significant disagreement with several of the audit findings stated in the report. Despite these disagreements, the actual audit recommendations are generally reasonable and align with improvement initiatives already underway. We accept these recommendations and outline our plan to address them as detailed in the attached table. We remain committed to conducting our mission of service in a safe and fiscally responsible manner. We intend to apply these learnings to fixed-wing as well as rotor-wing aircraft in TVA's fleet.

TVA's determination to purchase the aircraft on a sole source basis was reasonable and within the discretion of those authorized to make those decisions. TVA properly considered pertinent factors before purchasing on a sole source basis; these included the negotiated savings of $2.8 million savings off market value, aircraft safety, experience with past demand and usage of TVA aircraft, and other aircraft capabilities to meet TVA's needs.

The OIG audit correctly identified that some of TVA's purchase justifications are not typical of TVA use. These justifications represent maximum performance characteristics, which are not normally demanded. However, the higher margin of safety these characteristics provide were important considerations to TVA's purchase decision. The OIG "found that industry documentation supported TVA's statements regarding the safety of each aircraft."

The OIG's analysis focused solely on cost effectiveness. In reviewing TVA's purchase of a jet, the OIG suggested that a turboprop is more appropriate for TVA's needs. We disagree. When purchasing the jet, the acquisition of an additional margin of safety was a primary factor. TVA was aware of additional costs associated with a jet at the time of purchase and these costs were deemed acceptable to improve the margin of safety for our pilots and passengers. Specifically, the operating cost per nautical mile is approximately 7 percent greater for the jet. This is negligible when compared to the gains in safety of a jet versus the turboprop. As a guide for future aircraft purchases, TVA will perform, as appropriate, analysis similar to that found in OMB Circular A-11 consistent with the OIG's recommendation.

While the OIG stated "TVA's fleet is generally comparable to the number of fixed-wing aircraft (FWA) maintained by eight of its peers," accurate peer benchmarking demonstrates that TVA's air fleet is roughly 37 percent smaller than average.

TVA agrees that flight recordkeeping and reporting has been inadequate. We benchmarked our peers and concluded that the flight software currently utilized does not meet our regulatory or business needs. We are evaluating replacement software and revising our recordkeeping processes and procedures in order to improve documentation, recordkeeping and reporting. We performed a detailed review of the small number of flights (<1 percent of flights during the identified time period) the OIG identified as presenting questions about official travel, verified that they all qualified as official travel under applicable regulations, and noted that poor

recordkeeping contributed to the questions raised by OIG. None of the flights identified involved a violation of statute, and no traveler engaged in a knowing or intentional infringement of any law or regulation.

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***TVA Action & Comment Table***

| OIG Recommendation(s) | TVA Actions | TVA Comments |
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| **(1)** Provide valid justifications for future sole source aircraft procurement, and require supporting documentation for the justifications given, such as analysis of actual aircraft usage.<br><br>**(2)** Prior to purchasing aircraft in the future, perform analyses similar to that required by OMB Circular A-11 "business case for acquisition of aircraft" to ensure a standardized methodology that considers all aircraft lifecycle costs is utilized. Maintain all documentation, including all supporting documentation in accordance with TVA"s record retention policy. | TVA will ensure that supply chain processes adequately justify, support, and document sole source procurements in a manner which ensures the consideration of all aircraft lifecycle costs and requirements.<br><br>TVA will perform, as appropriate, analysis similar to that found in OMB Circular A-11 consistent with the OIG's recommendation. | A primary consideration when purchasing fixed-wing aircraft is safety. Any additional operating costs associated with a jet versus turbo prop are considered negligible to the increased margin of safety provided by the jet. The aircraft purchase was negotiated for a savings of $2.8 million below market price.<br><br>Justifications provided during the 2015 purchase, e.g. the ability to land on a 4,000 foot runway and the ability to carry 9 passengers, are considered maximum performance characteristics which provide an additional margin of safety and flexibility at marginal cost increase. They did not represent new requirements for a TVA fixed-wing aircraft. |
| **(3)** Develop appropriate costing information for TVA FWA travel.<br><br>**(4)** Require cost comparison analyses be performed in compliance with the FTR prior to scheduling of any flights, and maintain analyses documentation in accordance with TVA's record retention policy.<br><br>**(5)** Work with OGC to identify all applicable laws for all facets of FWA use and reporting and update TVA SPPs accordingly. Specifically, (a) incorporate the FTR requirements for travel authorization prior to use of TVA's FWA in the SPPs, and (B) ensure proper authorizations for use of TVA's FWA are obtained for senior federal official and nonfederal travelers in advance and in writing.<br><br>**(8)** Update TVA-SPP-32.04 to (a) reference applicable sections of FTR (41 CFR§ 300-304) and 31 USC § 1344, and provide guidance on | TVA will coordinate with the OGC to revise TVA-SPP-32.040, to ensure compliance with FTR and other pertinent legal guidelines. The SPP revision will provide guidance on requirements for government use, documentation of official business use, and approvals in reference to the applicable federal travel regulations and statutes. The SPP revision shall also include appropriate costing information for TVA aircraft travel, cost analyses when required, pre-authorizations, retention, waiver, waiver approval, waiver and mission documentation, and personal usage reporting requirements. SPP roles and responsibilities will be assigned in such a way to prevent one person from entering, reviewing, and approving information submitted to FAIRS and/or SFTR.<br><br>TVA will implement accounting procedures to allow for recovery | TVA has conducted benchmarking and concluded that the currently utilized flight scheduling software, Business Aircraft Records and Tracking (BART), is not used by our peers and does not meet our current business or FTR documentation needs. We are evaluating replacement software to improve documentation, recordkeeping, review and reporting. |

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| requirements of government aircraft usage, and (b) include requirements for reporting personal usage of TVA's FWA internally and externally as required by laws and regulations. | consistent with the FTR in the event that incremental costs are incurred due to routing choices exercised during the course of official travel by government aircraft, as they are in travel by other modes. | |
| **(6)** Enforce the requirement that all use of TVA aircraft be for official business; document the business purpose and approval for each flight; and maintain the documentation, in accordance with TVA's record retention policy, either in BART or some other media. In the case of any waivers, ensure (a) approval is documented and maintained, and (b) all proper internal and external reporting of personal usage occurs.<br><br>**(7)** Assign the scheduling role to a dedicated individual to provide consistency in applying and documenting SPP requirements (e.g., business justification, combination of allowed passengers) as well as entering information into BART for the scheduled flight, and maintain all information associated with scheduling each flight in accordance with TVA's record retention policy.<br><br>**(9)** Ensure TVA complies with the federal requirements for reporting (a) FAIRS information quarterly by including complete and accurate cost information, and (b) SFTR information semiannually by including nonfederal travelers. Also, maintain supporting documentation in accordance with TVA's retention policy.<br><br>**(10)** Implement separation of duties, and update the SPP, as appropriate, so one person does not enter, review, and approve information submitted for FAIRS and SFTR. | TVA will increase Aviation Services oversight and take measures to assign the scheduling role in a manner which supports compliance and consistency with SPP and federal reporting requirements.<br><br>TVA will revise TVA-SPP-32.040 to be consistent with applicable legal guidelines, provide guidance on requirements for government aircraft usage, documentation of official travel use, and approvals. Guidance will also include waiver, waiver approval, waiver and mission documentation, cost analysis and personal usage reporting criteria. TVA will also take measures to improve roles and responsibilities pertaining to data submissions to Federal Aviation Interactive Reporting System (FAIRS) and SFTR.<br><br>TVA will pursue a replacement for its aviation software to enable recordkeeping for appropriate justifications, authorizations, approvals, and associated documentation. | TVA has hired a General Manager of Aviation Services and is in the process of refining the roles and responsibilities within the Aviation Services Organization. Considerations include assignment of scheduling duties and potential additional headcount to support data entry, record keeping, and reporting. A procedure will be developed for a periodic review of flight activity by organizations outside of Aviation Services.<br><br>TVA has conducted benchmarking and concluded that the BART flight scheduling software currently utilized does not meet our business needs. We are evaluating replacement software to improve documentation, recordkeeping and reporting. Poor recordkeeping has contributed to questions involving the appearance that travel that may not have been official as defined by applicable regulations.<br><br>TVA will disclose travelers consistent with the FTR and statutory provisions protecting confidentiality. TVA will establish a process to ensure that review outside of Aviation Services determines when exemptions should be applied in accord with those statutes. |