



Memorandum

TO: HONORABLE MAYOR AND
CITY COUNCIL

FROM: Paul Joseph

SUBJECT: AIR SUPPORT UNIT

DATE: June 2, 2024

Approved

Date: 6/2/24

BACKGROUND

The Mayor's March Budget Message for Fiscal Year 2024-2025, as approved by City Council, directed staff to develop a Manager's Budget Addendum (MBA) summarizing projected maintenance costs for AIR3, the Police Department's helicopter, with recommendations for the optimal timing and method for replacing the unit, and additional analysis on the financial viability and associated funding options for future expansion of the Air Support Unit.

The San José Police Department (SJPD) Air Support Unit has operated for much the last 30 years with a single helicopter and a single engine fixed wing aircraft. As demands on police departments have evolved and the level of technology available has increased, a modern air support program has become a necessity for most major cities and county sheriff's departments. With the purchase of its first helicopter AIR1, the Department created the SJPD Air Support Unit. AIR1 was later replaced by AIR2, after a tragic mechanical failure, with an Eurocopter EC120 helicopter in 2001. AIR2 was equipped with a radio, spotlight, and camera that had a low-resolution thermal imaging camera. AIR3, an Airbus H125, was purchased in 2018, replacing the previous helicopter as it had reached its maximum flying time. AIR3 is equipped with a sophisticated radio system, spotlight, high resolution camera and thermal imaging system.

The Air Support Unit also purchased its last fixed wing aircraft, a Cessna 182, in 2001. This fixed wing was decommissioned in 2019 as the repair cost for its mechanical and airframe repairs were higher than its value. The fixed wing was equipped with a police radio and no other technology.

The result of supporting the needs of the Department with only two aircraft, resulted in a decelerated useful life of each aircraft, and required an accelerated and costly maintenance schedule to ensure their safety. Since scheduled maintenance is based on flight hours, the maintenance cycle on AIR2 was greatly accelerated. As the aircraft aged, the mechanical maintenance of the aircraft became greater as more parts wore out and caused more down time, which limited the availability of the aircraft to support police needs. In addition to downtime for mechanical repairs, AIR2 had significant limitations in its ability to perform its normal functions when it was operational due to the technology wearing out and breaking down.

During its last year of its operation in 2017, it was only available to fly 100 days of the year (27%); when AIR2 did fly, it operated with either no camera, no spotlight, or no thermal imaging camera. All Air Support operations since 2019 have been conducted solely with AIR3. As discussed below, operating an Air Support Unit for a department the size of the SJPD with a single aircraft is the most expensive and least productive model.

Fixed wing aircraft and rotor wing aircraft (helicopters) both have significant applications in law enforcement. Though some police functions can be accomplished by either, there are several functions that are unique to one or the other. A modern air support program for a major metropolitan area incorporates both. With that understanding, there are three aircraft models that can be implemented.

ANALYSIS

Deployment Models

1. Single aircraft deployment

This model is typically seen in smaller departments or departments that are starting an air support program for the first time. Some agencies do this with a fixed wing, but typically with a helicopter. When this model is used, the units typically fly very limited times, have limited staff and the field units are accustomed to operate without air support; if it is available, it is seen as a bonus and not a reliably available asset. These programs are typically less expensive due to the fact that they usually only fly 2-3 hours a day for only 3-4 days a week, or at just over 600 hours a year.

While SJPD is currently operating only one aircraft, due to the level air support is needed for the size of this city, the hours on the aircraft are significantly higher. AIR3 typically flies 4.5 hours a day, 7 days a week. While the Department's demands require more flight time, this accelerates maintenance cycles and increases the costs of operation, as maintenance is based on hours of flight time. Due to scheduled and unscheduled maintenance, AIR3 is available approximately 55% of the time.

2. Two aircraft deployment

This model is typically seen in a larger metropolitan department with a newer or growing air support unit. This model can work with two helicopters, two fixed wings or one of each. Two aircrafts share the flight hours throughout the week and keep the regular maintenance costs lower due to less flight use per aircraft. This also extends the useful life of the equipment and the aircraft itself.

- Both aircraft function at different times on a regular basis, sharing the workload throughout the week.
- When one aircraft is down for maintenance, the other is available to maintain operations.
- Both aircraft are available if there is a major event or multiple events in the city.

- With modern police equipment/technology this model can increase the operational time of the Air Support Unit.

San Jose operated with this model from 2001-2019. However, the SJPD Air Support Unit's aircraft during that time had limited police equipment on the fixed wing aircraft, much of which was obsolete for the last seven to eight years of use.

3. Multiple aircraft deployment

This model is used by many medium to large agencies with over 100,000 in population, with anywhere from as few as 3 aircraft to over 20 aircraft. The costs of operation are mitigated by setting timelines and maximum hours on each aircraft to limit maintenance cycles and to sell aircraft for maximum resale value, which can be up to half of the purchase price for a new aircraft. The funds from the sales are then leveraged to partially offset the cost of purchasing new aircraft. The largest municipalities, such as Los Angeles, as well as departments similar in size to San José, such as Phoenix and San Diego, maintain an Air Support Unit with multiple aircrafts. Several smaller departments have utilized this deployment model as well, including Anaheim and Huntington Beach, due to its significant productivity and cost effectiveness.

Multiple aircraft enhance emergency response capabilities, increase coverage area, and flight availability which result in more flight hours. More flight hours result in more on scene arrests, which in turn decreases investigative hours it would take looking for and locating the suspects later.

Further, multiple aircrafts ensure faster assistance in cases of disaster, search and rescue operations, but most importantly, provides redundancy in case one is unavailable due to maintenance, ensuring continuous coverage and support for the community.

Cost Comparison

Table 1 below provides a comparison of the cost of ownership over a 30-year period for each of the models described above. The single aircraft model has the lowest cost of ownership at \$31.2 million, followed by the three aircraft model at \$31.8 million, then the two aircraft model at \$34.0 million. However, because the having two or more aircraft increases the total number of flight hours, which could lead to additional 11,900 expedited arrests over 30 years, and reduces overall wear and tear on the aircraft, which results in lower maintenance costs and higher trade-in values, the cost per flight hour is 32% lower with two aircraft and 36% lower with three aircraft. Additional detail regarding the cost comparison is included in Attachment A.

Table 1: 30-Year Cost Comparison Summary

	1 AIRCRAFT (1 helicopter)	2 AIRCRAFT (1 helicopter, 1 fixed wing)	3 AIRCRAFT (2 helicopters, 1 fixed wing)
Cost of Ownership (Maintenance/Purchase/Trade-in)	\$ 31,155,000	\$ 33,975,000	\$ 31,790,000
Flight Availability*	55%	100%	100%
Annual Flight Hours	1,000	1,600	1,600
Total Flight Hours	30,000	48,000	48,000
Cost Per Flight Hour	\$ 1,039	\$ 708	\$ 662

*Based on the availability of the aircraft when needed.

Next Steps and Potential Unit Expansion

While expanding the Air Support Unit is a more cost-effective approach, significant upfront capital costs are required. The current cost of a fully equipped helicopter is \$6.5 million and \$5.7 million for a fixed wing. As AIR3 will need to be replaced in 2026-2027, and with an 18-24 month replacement lead time, the City will need to identify sufficient funding during the 2025-2026 Proposed Budget development process. If the City were to immediately transition to a three aircraft model (two helicopters and one fixed wing), the total one-time need would be approximately \$19 million. Given budgetary constraints, this is unlikely without the assistance of some form of capital acquisition financing (financing costs are not reflected in Table 1).

To ensure continuation of existing service levels, the City will need to prioritize the identification of replacement funding for AIR3 as part of the 2025-2026 Proposed Budget development process while also continuing to fund all required maintenance activities. Unfortunately, due to the extensive use of AIR3 as the sole operating aircraft, its trade-in or resell value by the time the replacement helicopter arrives is expected to be minimal. Under a multiple aircraft model, the lower amount of flight time per aircraft would allow the City to sell an aircraft while it still has significant value, thereby significantly offsetting the cost of purchasing its replacement. Therefore, in order to transition to a potentially more cost-effective model that also expands services levels; concurrently, the Administration will refine the financial analysis of the multiple aircraft model and explore options to expand the Air Support Unit, including financing tools, buildup of reserves, and potential grant funding.

COORDINATION

This memorandum was coordinated with the City Manager’s Budget Office.

/s/
 PAUL JOSEPH
 Acting Chief of Police

For questions, please contact Acting Chief of Police Paul Joseph at paul.joseph@sanjoseca.gov.

Attachment A: 30-Year Cost Comparison Detail

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Model	Annual Flight Hours	Availability	Year 1 - Year 5	Year 5 - Year 10	Year 10 - Year 15	Year 15 - Year 20	Year 20 - Year 25	Year 25 - Year 30
1 Aircraft	1000*	55%	5,000 hours	10,000 hours	5,000 hours	10,000 hours	5,000 hours	10,000 hours
Helicopter	1000		\$ 2,240,000	\$ 3,145,000	\$ 2,240,000	\$ 3,145,000	\$ 2,240,000	\$ 3,145,000
Maintenance Cost			\$ 2,240,000	\$ 3,145,000	\$ 2,240,000	\$ 3,145,000	\$ 2,240,000	\$ 3,145,000
Replacement Helicopter				\$ 6,500,000		\$ 6,500,000		\$ 6,500,000
Helicopter Trade in Value				\$ (1,500,000)		\$ (1,500,000)		\$ (1,500,000)
Net Replacement Cost			\$ -	\$ 5,000,000	\$ -	\$ 5,000,000	\$ -	\$ 5,000,000
Total Net Cost			\$ 2,240,000	\$ 8,145,000	\$ 2,240,000	\$ 8,145,000	\$ 2,240,000	\$ 8,145,000
			10 Year Accumulated Costs	\$ 10,385,000	20 Year Accumulated Costs	\$ 20,770,000	30 Year Accumulated Costs	\$ 31,155,000

Model	Annual Flight Hours	Availability	Year 1 - Year 5	Year 5 - Year 10	Year 10 - Year 15	Year 15 - Year 20	Year 20 - Year 25	Year 25 - Year 30
2 Aircraft	1600	100%	4,000 hours-H/4,000-FW		4,000 hours-H/12,000-FW	8,000 hours-H/16,000-FW	4,000 hours-H/4,000-FW	8,000 hours-H/8,000-FW
Helicopter	800		\$ 1,155,000	\$ 2,370,000	\$ 1,155,000	\$ 2,370,000	\$ 1,155,000	\$ 2,370,000
Fixed wing	800		\$ 750,000	\$ 1,600,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 1,600,000
Maintenance Cost			\$ 1,905,000	\$ 3,970,000	\$ 1,905,000	\$ 3,120,000	\$ 1,905,000	\$ 3,970,000
Replacement Helicopter				\$ 6,500,000		\$ 6,500,000		\$ 6,500,000
Replacement Fixed Wing						\$ 5,700,000		
Helicopter Trade in Value				\$ (2,000,000)		\$ (2,000,000)		\$ (2,000,000)
Fixed Wing Trade in Value						\$ (2,000,000)		
Net Replacement Cost			\$ -	\$ 4,500,000	\$ -	\$ 8,200,000	\$ -	\$ 4,500,000
Total Net Cost			\$ 1,905,000	\$ 8,470,000	\$ 1,905,000	\$ 11,320,000	\$ 1,905,000	\$ 8,470,000
			10 Year Accumulated Costs	\$ 10,375,000	20 Year Accumulated Costs	\$ 23,600,000	30 Year Accumulated Costs	\$ 33,975,000

Model	Annual Flight Hours	Availability	Year 1 - Year 5	Year 5 - Year 10	Year 10 - Year 15	Year 15 - Year 20	Year 20 - Year 25	Year 25 - Year 30
3 Aircraft	1600	100%	2,250 hours-H/3,500-FW	4,500 hours-H/7,000-FW	2,250hours-H/10,500-FW	4,500 hours-H/14,000-FW	2,250 hours-H/3,500-FW	4,500 hours-H/7,000-FW
Helicopter 1	450		\$ 210,000	\$ 430,000	\$ 210,000	\$ 430,000	\$ 210,000	\$ 480,000
Helicopter 2	450		\$ 210,000	\$ 430,000	\$ 210,000	\$ 430,000	\$ 210,000	\$ 480,000
Fixed wing	700		\$ 150,000	\$ 750,000	\$ 1,600,000	\$ 750,000	\$ 150,000	\$ 750,000
Hangar Lease for 3rd Aircraft			\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
Maintenance and Lease Cost			\$ 1,070,000	\$ 2,110,000	\$ 2,520,000	\$ 2,110,000	\$ 1,070,000	\$ 2,210,000
Replacement Helicopter 1				\$ 6,500,000		\$ 6,500,000		\$ 6,500,000
Replacement Helicopter 2				\$ 6,500,000		\$ 6,500,000		\$ 6,500,000
Replacement Fixed Wing						\$ 5,700,000		
Helicopter 1 Trade in Value				\$ (3,500,000)		\$ (3,500,000)		\$ (3,500,000)
Helicopter 2 Trade in Value				\$ (3,500,000)		\$ (3,500,000)		\$ (3,500,000)
Fixed Wing Trade in Value						\$ (3,000,000)		
Net Replacement Cost			\$ -	\$ 6,000,000	\$ -	\$ 8,700,000	\$ -	\$ 6,000,000
Total Net Cost			\$ 1,070,000	\$ 8,110,000	\$ 2,520,000	\$ 10,810,000	\$ 1,070,000	\$ 8,210,000
			10 Year Accumulated Costs	\$ 9,180,000	20 Year Accumulated Costs	\$ 22,510,000	30 Year Accumulated Costs	\$ 31,790,000

*Target Annual Flight Hours is 1,600, but under the 1 Aircraft Model, the maximum amount that can be available is only 1,000.

1 Aircraft Model		2 Aircraft Model		3 Aircraft Model	
Time Period	Cost/hour	Time Period	Cost/hour	Time Period	Cost/hour
Year 1 to Year 10	\$ 1,039	Year 1 to Year 10	\$ 648	Year 1 to Year 10	\$ 574
Year 1 to Year 20	\$ 1,039	Year 1 to Year 20	\$ 738	Year 1 to Year 20	\$ 703
Year 1 to Year 30	\$ 1,039	Year 1 to Year 30	\$ 708	Year 1 to Year 30	\$ 662