



AGENDA REPORT

Library and Community Services

DATE:	February 4, 2025
TO:	Mayor Martinez and Members of the City Council
FROM:	LaShonda White, Deputy City Manager Ranjana Maharaj, Deputy Director for Community Services-Recreation Kymberlyn Carson-Thrower, Recreation Supervisor
Subject:	Comparative Analysis of Drone Shows to Traditional Fireworks as an Alternative to the Third of July Celebration
FINANCIAL IMPACT:	None
PREVIOUS COUNCIL ACTION:	February 20, 2024
STATEMENT OF THE ISSUE:	This item is responsive to inquires made through the February 20, 2024, City Council agenda item and provides an assessment of cities within a 200-mile radius of Richmond and their use of traditional fireworks versus drone light technology to celebrate Independence Day
RECOMMENDED ACTION:	RECEIVE a report regarding the use alternate technology, including drone lighting technology for the annual Third of July celebrations, and ACCEPT City staff recommendation to continue with the traditional display of the fireworks show for the Third of July celebrations – Community Services (LaShonda White/Ranjana Maharaj/Kymberlyn Carson-Thrower 510-620-6789).

DISCUSSION:

On February 20, 2024, Councilmember Sohelia Bana brought forth an agenda item regarding options for alternate technology, such as drone lighting technology in lieu of fireworks, to celebrate Independence Day to improve the environmental impacts, cost implications, and safety (Attachment 1). During the discussion, Councilmembers requested a cost analysis for a drone or laser fireworks show, what the potential cost savings could be for fire and police dealing with illegal fireworks, how a drone show could reduce impacts on the environment and noise pollution levels, and an analysis if drone shows would curtail unlawful fireworks (Attachment 2).

General Information

Switching from traditional fireworks to drone shows is an alternative a few Northern California cities have incorporated. However, considering drone shows and other alternative technology instead of traditional fireworks for Fourth of July celebrations will require balancing the concerns related to logistics, safety and environmental impact, cost, timing and public input from all stakeholders.

Logistics

Drone shows require different logistics than fireworks, including coordinating hundreds of drones, often choreographed to music, requiring specialized software and technical expertise. This coordination can be challenging, but the absence of explosives mitigates the risk of fires or the need for permits for hazardous materials, making the shows safer and potentially easier to manage in fire-prone areas.

Like traditional fireworks shows, drone shows are also facilitated by the contractors to provide all necessary equipment, including drones, as well as the expertise required to choreograph and execute the show. These companies handle the logistics, such as transportation, setup, maintenance, and the actual operation of the drones during the event. Hiring specialized companies to deliver drone shows allows the city to avoid the logistical burdens of owning and maintaining a fleet of drones, making this a feasible option despite the higher upfront costs.

Safety and Environmental Impact

Drone shows eliminate the risk of fires, a significant concern in wildfire-prone areas of Northern California. Additionally, they produce no air pollution, unlike fireworks, which release heavy metals and other toxins into the air. The environmental benefits also extend to noise reduction, making these shows more suitable for pets, wildlife, and individuals sensitive to loud noises.

Cost Information

Traditional fireworks displays vary widely in cost depending on the scale. Drone shows, on the other hand, are generally much more expensive. However, the initial higher costs of drone shows may be offset by savings in cleanup and reduced environmental impact.

Drone show costs include lodging and associated expense vendors while accounting for the drone show display. There could also be additional costs associated with the delivery of the drone show based on the location.

The City of Richmond has historically hosted traditional fireworks on July 3, which reduces cost significantly compared to July 4. Typically, the cost for a fireworks display is approximately \$64,400. However, additional costs, including the utilization of a tug and barge service for the display, increase the total cost to more than \$103,000 for a 20-minute show. This amount is higher than usual compared to the amounts paid in recent years due to increased fuel, supplies, and shipping costs. In comparison, drone shows can range from \$99,000 up to \$300,000, and these costs do not account for the lodging and expenses related to having operators on-site. The drone shows have a run time of approximately 8-10 minutes, while the traditional is nearly double that time with a run time of roughly 20 minutes.

Table 1: Costing Estimates for Timed Drone Shows and Timed Traditional Firework Shows

	Classic (200 - 300 Drones) 8- Minute Show	Premium (300 - 500 Drones) 11- Minute Show	Program A 20-Minute Show	Program B 20-Minute Show
Drone Show				
The Drone Girl	200 = \$149,000 300 = \$199,000 (+ Lodging Expenses)	300 = \$199,00 500 = \$299,00 (+ Lodging Expenses)		
Sky Worx	12-Minute Experience \$200-\$400 per drone (+ Lodging Expenses)	200 = \$40,000 - \$80,000 300 = \$60,000 - \$120,000 500 = \$100,000 - \$200,000		
Intel	200 = \$99,000 300 = \$149,000 (+ Lodging Expenses)	300 = \$199,000 500 = \$299,000 (+ Lodging Expenses)		
Fireworks Show				
Pyro Spectaculars (Land Shoot)			\$64,400	
Pyro Spectaculars (Barge Shoot)				\$103,185

In a survey of cities within approximately 200 miles of Richmond, categorized by their use of drone showcases, traditional fireworks, or a combination of both for their Fourth July celebrations, traditional fireworks are in wide use (Table 1). More specifically, of the 16 cities surveyed 3 cities (i.e., Napa, North Lake Tahoe, and Visalia) utilize drone shows exclusively while the balance of those communities (e.g., Berkeley, Oakland, San Jose, Concord, etc.) surveyed or approximately 80 percent retain and utilize

traditional fireworks exclusively to celebrate Fourth of July. Likewise, only one city (i.e., Rancho Cordova) utilizes a combination of drones and traditional fireworks.

Table 2: Comparison of City's Drone and Firework Usage

#	City	Drone Showcases	Traditional Fireworks	Combination of Drone & Fireworks
1	Napa	Yes	No	No
2	North Lake Tahoe	Yes	No	No
3	Rancho Cordova	No	Yes	Yes
4	Visalia	Yes	No	No
5	San Francisco	No	Yes	No
6	Oakland	No	Yes	No
7	Berkeley	No	Yes	No
8	San Jose	No	Yes	No
9	Sacramento	No	Yes	No
10	Concord	No	Yes	No
11	Fresno	No	Yes	No
12	Monterey	No	Yes	No
13	Santa Cruz	No	Yes	No
14	Stockton	No	Yes	No
15	Modesto	No	Yes	No
16	Santa Rosa	No	Yes	No

Council Inquiry Response

In response to Councilmember Bana’s request, Community Services staff met with Richmond Fire Department (RFD) and Richmond Police Department (RPD) staff to discuss if utilization of drone shows would:

1. contribute potential cost savings for their personnel dealing with illegal fireworks
2. curtail illegal fireworks

City staff determined that drone shows would not impact illegal fireworks. The RPD continually gets reports of illegal fireworks the week(s) leading up to July 4. Richmond’s fireworks are held a day before other agencies to allow residents and neighboring communities to participate in the celebration. It is important to note that the visibility and effectiveness of drone light displays are highly dependent on the viewing angle of spectators. Due to the nature of drone formations, the intended shapes and designs may not be clearly discernible from all vantage points. As a result, a significant portion of attendees may have difficulty interpreting the display based on their location within the viewing area. This limitation should be taken into account when evaluating the

feasibility of drone shows as a public spectacle. As for staffing, the RDP and the security personnel levels will remain the same as they handle safety and crowd control at the Marina Bay Park location.

The RFD has indicated that there is no conclusive evidence to suggest that implementing a drone show would reduce the use of illegal fireworks. Furthermore, RFD staffing requirements for the event would remain unchanged, as their personnel are responsible for providing emergency medical response and fire prevention oversight throughout the duration of the event. RFD also noted that the most significant issues with illegal fireworks occurred during the pandemic. During that time, staff efforts to confiscate illegal fireworks were met with hostility, highlighting the challenges of enforcement.

Implementing an ordinance may provide law enforcement with the ability to issue fines for the use of illegal fireworks; however, this alone is not a guaranteed solution for curbing their use. Enforcing such regulations would require additional resources. A complementary approach would involve engaging the community through social media and other media outlets to promote a zero-tolerance message regarding illegal fireworks.

STAFF RECOMMENDATION:

Richmond’s annual fireworks event serves as more than just a display—it is a community gathering that includes entertainment, food vendors, games, and an opportunity for residents to enjoy the outdoors. Given the longstanding tradition of a traditional fireworks show, many community members may continue to expect this type of display. To ensure that any future changes align with public preference, city staff recommend conducting a community outreach to gauge resident opinions on different fireworks display options.

For the 2025 fireworks show, City staff has already received a bid for a traditional fireworks display. Based on the information presented in this report and the limited timeframe available for awarding the bid and finalizing the vendor contract, City staff recommends that Richmond proceed with a traditional fireworks display for 2025. Future decisions regarding alternative display options should be informed by community feedback, as well as consideration of cost, and input from the City Council and impacted City Departments, as well as residents.

DOCUMENTS ATTACHED:

Attachment 1: Staff Report dated February 20, 2024

Attachment 2: Report on Drone versus Traditional Firework Show