



Eye-in-the-Sky Policing Needs Strict Limits

We're on the cusp of an explosion in law enforcement use of drones. Is America ready?

By Jay Stanley

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A new use for drones has arrived in the United States: so-called “Drones as First Responder” (DFR) programs, which involve sending unpiloted aerial vehicles to the location of 911 calls. In 2019 the city of Chula Vista, California, became the first to start a DFR program, but the number of cities and towns following suit — already more than a dozen — is poised to explode, along with other police uses of the technology. And those novel uses for drones threaten to pave the way for an even greater expansion of the aircraft in the skies above American communities.

A world where flying robotic police cameras constantly crisscross our skies is one we have never seen before. While some departments have long used fixed-wing aircraft and helicopters for some aerial surveillance, drones are far cheaper and can therefore be used by many more departments and in much greater numbers.

Widespread police use of drones would be a major change, with implications foreseeable and not. Yet there are strong reasons to believe that such a world may be coming faster than most people realize. It's important that we don't sleepwalk into a world of widespread aerial surveillance, that communities think very carefully about whether they want drone surveillance, and, if they decide to permit some operations, put in place guardrails that will prevent those operations from expanding.

Why police drone use is likely to take off

Already there are over 1,400 police departments in the United States [using drones](#). Such use increased sharply after the Federal Aviation Administration (FAA) enacted [new regulations](#) in 2016 allowing anyone to fly a drone as long as they follow certain rules. But operators in the United States, including police departments, are still generally not allowed to operate a drone beyond their visual line of sight (BVLOS). A few police departments have gone through an extensive and time-consuming processes to secure a special exemption from this ban from the FAA so that they can carry out drones-as-first-responder flights.

The number of departments seeking such exemptions is [growing](#). I recently spoke to Matt Sloane, the CEO of Skyfire, a consulting firm that works with public safety agencies looking to start drone programs, and he told me that “there’s going to be an explosion of these departments doing DFR in the next 6 to 12 months. We’re talking to 5 or 6 departments a week.” Even back in 2020, [a poll](#) by the organization Drone Responders found that 75 percent of 248 public safety respondents said “yes” when asked whether their organization wanted to conduct BVLOS flights. The process of applying for an FAA waiver is getting smoother, and companies have already begun [marketing drones](#) and [software](#) specifically for the first responder market.

But for now, for most of the nation’s approximately 18,000 law enforcement agencies, the ban generally restricts the use of drones to local spot deployments and generally prevents them from being used for routine, suspicionless surveillance.

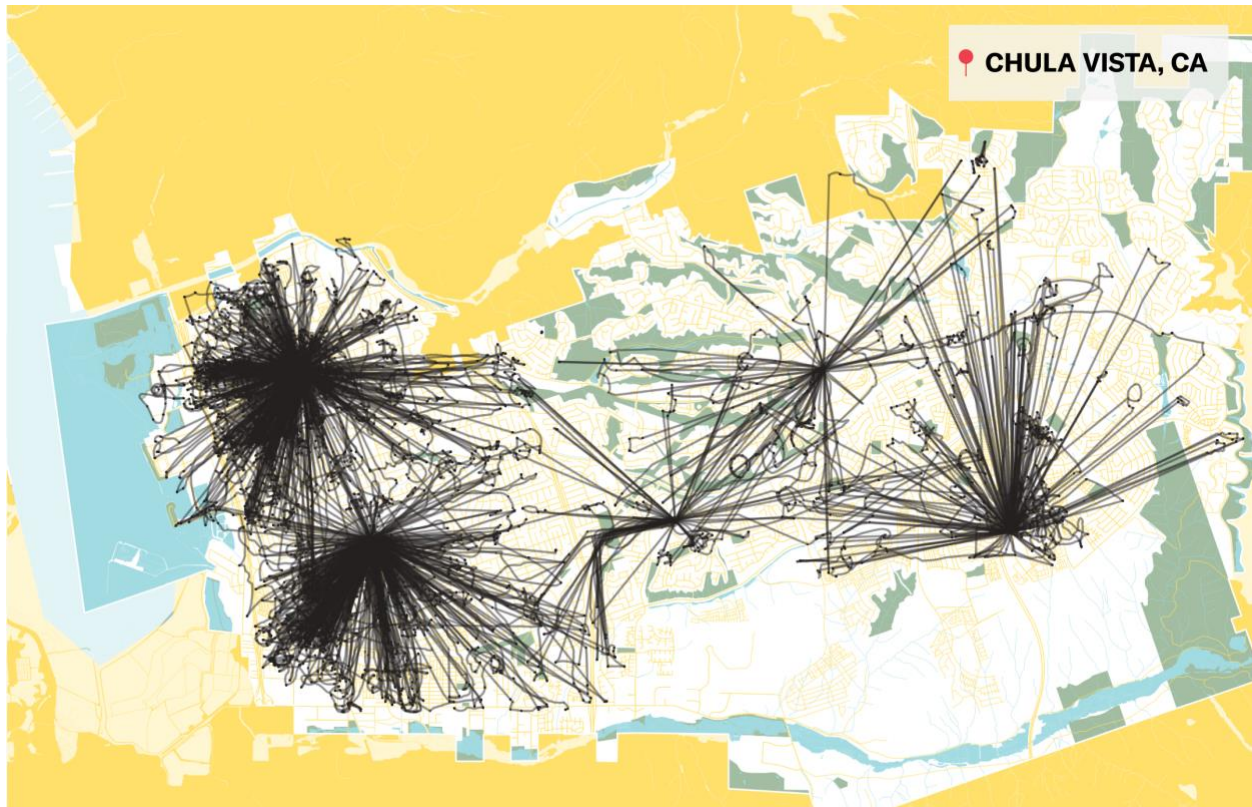
The FAA, however, is currently working toward another revolutionary [rulemaking](#) — this one allowing by-right BVLOS flights for anyone who meets certain criteria. Some in Congress are [pushing](#) the agency to move quickly to issue such rules, which may open the skies to all kinds of uses, including delivery drones, and greatly increase the overall number of drones operating over our communities. In particular, they will open the door to many more police DFR programs, and to whatever other uses of aerial robots might be dreamed up by America’s law enforcement agencies, and by the growing ecosystem of drone companies hungry for markets.

It’s also clear that police departments will push their use of drones beyond emergency response. Proponents cite their potential usefulness in responding to dramatic crimes and emergencies, but in Chula Vista, where the police department has been running its DFR program for more than two years, a large portion of deployments are for much less serious incidents. Some of the more than 14,000 drone flights [reported](#) by Chula Vista have been responses to calls about apparently serious situations like fires, accidents, and gun violence. But many [other](#) deployments have been in response to family and domestic disputes, wellness checks, mental health evaluations, shoplifting, and “suspicious persons.” In recent months drones were dispatched in Chula Vista for reports of “loud music,” a “water leak,” and someone “bouncing a ball against a garage.”

As Patrick Sisson [put it](#) in Technology Review:

Police departments like to share examples of daring and excitement: drones assisting officers in tracking down suspects, providing situational awareness during tense arrests, or helping to secure crime scenes. But drill down and ask about the real case for drones, and they’ll talk about the practical matter of clearing 911 calls.

This is a classic case of government powers being justified by the most serious applications — and then their uses rapidly expanding to much more mundane purposes. To their credit, Chula Vista has been quite transparent about its drone program; in May, the Chula Vista Police Department gave me a tour of their drone operation, and the officers there answered my questions openly. It seemed clear that they genuinely view their DFR program as helping their community, including by reducing the number and danger of police interactions. And I believed them when they said they had no desire to use drones in broader ways, such as for routine surveillance.



Drone Flights over Chula Vista April 2021-May 2023 cover most inhabited areas of the city. The black lines represent drone flight paths.

But this issue is far bigger than any one police department and its current practices. It’s not hard to see how, once normalized by deployments such as DFR programs, police drones could become an increasingly common sight over American communities for a wide range of police purposes. In addition to what we’re already seeing, those purposes could include:

- **Suspect surveillance.** “We got a report of a shoplifter, but we don’t have a spare officer to send so we’ll follow the accused around the city with a drone until an officer is available to apprehend them.”
- **Anticipatory or intelligence-based crime locations.** Santa Monica sends its drones on such missions. “Say we had a specific [parking] structure where we’re constantly having vehicle burglaries — there may be a periodic check,” an officer told a [reporter](#).
- **Routine patrols of particular neighborhoods.** “Our predictive policing software suggests a high chance of crime on that street tomorrow night.” Or, “That wealthy enclave keeps insisting we increase our patrols to watch for suspicious visitors.”
- **Routine patrols of an entire city.** “We can stop and solve more crimes if we have eyes over the whole city, so why wouldn’t we do that?”

That last step — that drones will usher in an era of pervasive, suspicionless, mass aerial surveillance — has [always](#) been one of our biggest fears. Though the desire of at least some to do so is [apparent](#), most police officials disclaim any such interest. And critically, in a case

litigated by the ACLU and ACLU of Maryland, an attempt by the Baltimore Police Department to deploy pervasive, city-wide aerial surveillance (using piloted aircraft) was [struck down](#) by the Fourth Circuit Court of Appeals as violating the Constitution.

But it's not clear where the courts will draw lines, and there's a very real prospect that other, more local uses of drones become so common and routine that without strong privacy protections we end up with the functional equivalent of a mass surveillance regime in the skies. We don't have to think current police officials are lying to understand that mission creep is a very real tendency. While controversial new police technologies are often unrolled in limited ways and accompanied by promises of best behavior, they may be overtaken by later adopters who brush aside the limits and promises of the early pioneers.

In fact, it's already starting. One city, Beverly Hills, has become the first in the nation that we know of to begin using drones on [routine patrols](#) — an alarming expansion in the use of this technology. Following a shooting at a parade, Chicago [passed](#) legislation that would allow the police to use drones over “special events” such as parades and festivals. That ordinance prohibits the use of drones to monitor events that touch more closely on First Amendment rights, such as protest marches, but there's still plenty of reason for concern — and many police departments will likely want to use drones for such purposes. The Omaha Police Department in Nebraska [boasted](#) that “During protests, we also used the sUAS [drone] to document activities from a great vantage point.” Police in Elizabeth, New Jersey used drones to [monitor a protest](#) by local students demanding fewer police and more counselors in schools, and for a wide [variety](#) of other uses. Many people were appalled by widely circulated [videos](#) of drones in China [shouting](#) at people to comply with COVID measures — but for the Elizabeth police, that was a [model](#) to be [embraced](#), and touted as a “[success](#).”

Illegitimate uses of drones may not depend on BVLOS flights — a lot of ground can be covered within the line of sight of an operator on top of a tall building. But the number and scope of drone operations will almost certainly balloon when by-right BVLOS operations become possible.

Implications of police drone flights

Are Americans ready to have large numbers of police drones flying and hovering over their homes and communities?

Of course, uniformed police officers and marked police cars already circulate throughout our communities, observing what is around them. But many people feel self-conscious and uncomfortable when a police car is driving behind or near them, or when a uniformed police officer is watching them. In communities of color where residents have sharp reasons to fear dangerous interactions with law enforcement, the negative feelings evoked by a watchful police presence can be far more powerful.

So what happens when the presence of police “eyes” expands? Won't we have these same feelings when there are police drones flying overhead — likely armed with powerful zoom lenses (as today's DFR drones already are) that might single us out at any time and watch with great detail what we are holding, wearing, or doing?

One stated advantage of DFR programs is that they can be a “force multiplier” for overworked departments, allowing police to stretch more work out of fewer officers. But just how much of such “multiplication” do we want? There’s a large body of writing by psychologists and those who have lived in totalitarian regimes on how living under surveillance creates feelings of powerlessness and is inherently stressful and stifling. When we know we’re being watched, we monitor ourselves — we think about what we’re doing, how it might appear to others, and how it could be taken out of context or mistaken for suspicious behavior. We’re more likely to censor ourselves and to conform, and less likely to dissent. We’re less freewheeling and spontaneous. Basically, we’re just less free.

If a drone flies over my yard, do I have to worry that it is capturing me and my friends as we smoke weed in my back yard? If I’m helping my son with wrestling moves for his high school match, is it going to be misinterpreted as some kind of fight? If my kids are playing with an airsoft gun, is my house is going to get raided by a SWAT team? Will I need to worry that a police drone is looking through my windows into my house? The Constitution doesn’t normally permit warrantless surveillance where people have a “reasonable expectation of privacy,” but abuses do occur, and when they do people naturally become paranoid.

Drone surveillance will be sold as increasing “security,” but a full definition of that word should incorporate the sense of safety and well-being that people want to feel when they’re in their homes and communities. Persistent surveillance can undermine that kind of security.

We are hopeful that the FAA’s “[Remote ID](#)” system, which is basically a requirement that drones carry a radio “license plate” transponder, will allow people to easily find out whether a drone hovering overhead belongs to the police, to Amazon, or to the kid next door. Non-police drones can [pose a threat](#) to privacy as well, but a local burrito delivery drone is not generally going to create the same chilling effects as a police drone. If people do not gain an easy and practical way to tell whether drones that are overhead belong to the police, then they’re likely to feel the police may be watching whenever *any* drone is overhead.

Low-income communities of color in certain areas like Los Angeles have been dealing with oppressive aerial surveillance for many years, from police helicopters. Those communities have found such surveillance physically and psychologically [harmful](#). Drones, too, are likely to be deployed first and foremost in low-income communities — though they could easily become far more pervasive and ever-present than police helicopters, which are expensive and thus subject to [natural limits](#) on their deployment, especially in communities that don’t have very well-funded police departments.

Finally, we should keep in mind that, with advances in artificial intelligence, video is becoming a far more searchable, accessible, and analyzable — and therefore dangerous — set of data than it used to be. There will be a constant incentive on the part of both government and private contractors to run video datasets through machine learning algorithms for AI training purposes and to search for particular violations of the law or other facts of interest to law enforcement that might be buried within. Human attention is [no longer a limiting factor](#) when it comes to analyzing video data.

The jury's still out on "drones as first responder" programs

We're very concerned that we may be moving toward a future where we find ourselves constantly scanning the skies, seeing drones overhead, and feeling like the eyes of law enforcement are always upon us. That's no way for anybody to have to live.

Today's DFR programs for now remain much more limited in purpose, and many or most of the departments running such programs disclaim any intention to engage in more systematic surveillance. So what are we to think about what's happening now?

The ACLU recognizes there are many situations where drones can be useful for law enforcement and don't involve undue surveillance. We don't object to the use of drones for specific emergencies, or in bounded situations where there are specific and articulable grounds to believe that the drone will collect evidence relating to criminal wrongdoing (except where the drone will intrude upon reasonable expectations of privacy, in which case the government must obtain a warrant based on probable cause). We don't see a problem with their deployment for such uses as accident or crime scene photography.

At the same time, we are adamantly against the use of drones for routine, suspicionless, or mass surveillance. We laid out our early, and still applicable, views on law enforcement use of drones in more depth in a [2011 report](#).

Given that so many 911 calls are not true emergencies, DFR programs like Chula Vista's lie in a gray area between these two ends of the spectrum — between emergency-only and routine deployments of drones.

Police proponents in Chula Vista and elsewhere cite various examples to argue that the technology can be good for civil liberties by helping to de-escalate potentially dangerous situations — for example, an incident in which a drone was able to [establish](#), before police arrived, that a man reported to be waving a gun was actually holding a gun-shaped cigarette lighter, lowering the chances that frightened officers arriving on the scene would use deadly force when they didn't need to.

Police departments regularly receive and must respond to false or unreliable reports, including calls from racist citizens [complaining about Black people](#) doing ordinary things. That may just lead to more police cameras crisscrossing the skies for no good reason. Or, DFR boosters would argue, if it can be established by drone rather than by the arrival of armed police officers that nothing actually suspicious is taking place, fraught law enforcement encounters can be reduced.

As we [always stress](#), it's important not to make policy by anecdote. Anyone can come up with scenarios about how a technology will improve people's lives and the life of a community. The real question is how it will play out over time in this complex and messy world, where it's likely to have cascading effects that we can only dimly anticipate.

Will DFR programs become a tool of undeniable usefulness for law enforcement with positive effects for individuals and for communities? Will they become just another layer of surveillance and another weapon in the war on drugs, in over-policing, in the targeting of Black, low-income,

and other vulnerable communities, and otherwise amplify the problems with the deeply broken U.S. criminal legal system? Many drone missions appear to be, as Dave Maass from the Electronic Frontier Foundation aptly [put it](#), for “crimes of poverty.” Will DFR programs lead to a decrease in fraught citizen-police interactions, as proponents suggest — or an increase, as police are called out to investigate numerous “suspicious” scenes — such as a man teaching his son wrestling moves — that without drones would never have been noticed?

With DFR programs, the technology and programs are so new that the jury is still out.

We are watching these programs to see how they operate, what they may evolve into, and how communities are reacting to them. Given the uncertainties, we recommend that communities hold off on creating DFR programs until we have a better sense of how they play out in the communities that have already deployed them.

Guidelines for existing DFR programs

Existing DFR programs must adhere to a strict set of limits to make sure they don’t evolve into much broader surveillance programs. Given the novelty of DFR, unanticipated issues are likely to emerge, but at the moment it looks clear to us that policies are needed in three areas: usage limits, transparency, and data handling.

Of course, even before considering those factors, a threshold question is whether a community has been fully informed about a DFR program and has then decided that it wants its police department to deploy this tool. A police department should not, [and should not be permitted to](#), deploy surveillance technologies without the consent of the community it serves.

Good policies, including on usage limits, transparency, and privacy, should not be left up to police departments, but should be given legal force by a city council or other legislative body as part of a vote to approve a DFR program.

Usage limits

As a number of [critics](#) have [pointed out](#), it’s questionable how much the presence of drones really helps the authorities in dealing with everyday police calls — but every deployment means a law enforcement camera flying across town. Communities that have decided they want to allow their police department to use BVLOS drones as first responders should impose limits on the circumstances under which those drones are deployed, restricting them to emergencies first, and secondly to the most serious ones. Communities should also bear in mind that mass and suspicionless aerial surveillance violates the Constitution’s Fourth Amendment.

Transparency

Drones are a powerful and novel surveillance technology, and the public has a right to know how they’re being used and how that is working out — not only as a question of resources, but also because there are legitimate fears of the misuse of aerial surveillance. We’ve seen such misuse with police helicopters — in New York City, for example, where operators of an aircraft

hovering over a 2004 bicycle protest diverted their night vision camera to [film an amorous couple](#) on a pitch-black rooftop balcony.

It is critically important that police provide clear information about where and when surveillance drones have operated and the policies that govern their use. [Chula Vista](#) and [Hemet](#), California have commendably adopted the practice of publishing the time, purpose, destination, and precise route of every DFR flight. Although many of the listed flight purposes are missing or vague (“unknown problem”), which should be fixed, overall these disclosures give the public a good start at understanding why and where drones are being deployed. With proper controls and auditing, this data could also serve as a deterrent to flights that are not for legitimate law enforcement purposes. The practice of per-flight transparency should be regularized and mandated as a part of every police BVLOS drone program.

However, few police departments appear to have provided much transparency about their DFR programs. Of the dozen or so other departments running such programs that we have heard of and reviewed, no others published a record of flights, and only a handful had published the policies governing their drone operations. Many departments had no information whatsoever about drones on their websites, despite touting their programs in local media outlets.

Key elements of transparency include:

- **Capabilities and sensor payload.** Drones are a platform; they typically include regular video cameras but can also carry any kind of sensor that has been invented, including night vision, radar, [lidar](#), cell phone tracking tools and other radio devices, and chemical and biological sensors. Other technical capabilities such as battery life and top flight speed should also be shared with the public.
- **Drone policies.** Ideally, policies covering such elements as criteria for deployment, privacy practices (such as data storage, retention, and access), and auditing (as we discussed in our 2011 [paper](#)) would be given legal force by a city council or other legislative body, but where internal police department policies govern operations, those should be made public.
- **Performance and results.** With any technology that has potential ramifications for privacy and other civil liberties, a threshold question is whether it works. Vendors frequently push new technologies by making all kinds of unproven claims about their performance and benefits. Meanwhile, drones can have significant downsides, from their monetary costs to privacy, noise, the danger of crashes, and other quality of life issues. The public deserves to know to what extent these aircraft are actually offering practical real-world benefits for the community, and whether any such benefits outweigh their disadvantages. Law enforcement agencies tend to trumpet their successes and bury their failures, so communities should carefully consider how they can obtain independent auditing or other disinterested evaluations of the technology over time.
- **Video of public interest.** Police drone video can be highly privacy invasive, for example when it captures people experiencing domestic violence or mental health crises. In such cases, timely deletion and limits on access are appropriate. In other situations, however, such as where a police shooting has been [recorded](#), the public interest in access to video is [paramount](#), and in those cases police departments shouldn’t be allowed to bury it (for

example, by claiming that it is tied to an [ongoing investigation](#)). We have [published](#) (and [some jurisdictions](#) have adopted) a carefully considered [framework](#) for balancing the privacy and transparency interests of police body camera video, and we believe that drone video should be handled under that same framework.

Privacy rules

The handling of data is another important issue that should be addressed.

- **Recording policies.** A significant question around police drones is what kind of imagery they capture, and how that data is handled. The more that drones are crisscrossing a community, the more of everyday life they have the potential to record. Some drones have cameras that beam video back to the craft's operator for navigation purposes, while carrying other cameras used for photography at the scene. There is no reason that video from navigation cameras should be recorded, and there's no reason why downward facing cameras should record while they're traveling to and from their destination. A [number](#) of [departments](#) currently say they do record en route but point their cameras forward rather than downward, so they can get "eyes" on the emergency location as soon as possible. Better would be not to record at all en route.
- **Data sharing and retention.** Any imagery that is collected should not be shared with other parties unless there is reasonable suspicion that the images are relevant to an ongoing investigation or pending criminal trial, contain evidence of criminal activity, capture a police use of force, or capture incidents that are the subject of a complaint against an officer. Such data should not be subject to AI analytics, and should be retained no longer than necessary under our recommended [framework](#) for body camera video.
- **Private companies.** Communities and police departments should pay particular attention to private-sector vendors and contractors who are part of a drone program. Do they have access to data that police drones are collecting? If so, that raises additional privacy concerns, since profit-making companies can have incentives to use and abuse data in ways beyond those of law enforcement. At the very least, any such companies must be contractually bound to honor the policies that apply to the department.

These limitations are important to prevent drones from expanding from tools for specific emergencies into general surveillance devices that lend themselves to abuse and over-use and create chilling effects in a community.

Conclusion

Drones often [elicit](#) a [visceral response](#). When the identity of their operator and reason for their presence are not crystal clear, they are [inscrutable](#) and often perceived as alien and hostile. We saw a very [strong backlash](#) in state legislatures around the country when drones first came into their own in the early 2010s, because this technology has a significant potential to invade privacy, create chilling effects, and otherwise degrade the quality of life of our communities.

American police departments have begun making the case that they should be permitted to fly drones broadly across cities and towns for purposes such as responding to emergencies, but they are already being used far more broadly than many realize, and their use is likely to broaden even more. We recommend that communities put in place statutory guardrails to ensure that drone use

does not overflow reasonable limits, and that they do not initiate DFR programs until we have a better sense of how this technology is playing out in the real world.