

Drone as First Responder (DFR)

Program Guide



Why read this document?

You're an expert at public safety; we're experts at deploying UAS in public safety. This document outlines the commonalities we see as agencies start a DFR program. We built it to help you proactively guide your program to where you want it to be—an asset for your department and community.

We encourage you to get started, see the systems' capabilities, and think about how they could help your agency. At the same time, it is essential to dig into the nuts and bolts of how your program will support itself, grow, and become the program you need. This document outlines steps, but remember that steps can be taken in tandem.

Already have your Skydio equipment? Scan this QR code to review our quick start guide and get started with your first flight.



Notice Regarding Printed Copies

This guide is subject to updates. For the most current recommendations, refer to the online version on our [Support site](#). **Printed or locally stored copies may become outdated.**

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Guiding Principles

Implementing a Drone as a First Responder (DFR) program is exciting and there are many things to consider when getting started. We encourage your agency to focus on these guiding principles from the nascent stages of the program through production usage. These guiding principles will help guide decisions and make your program a success for your agency and the community for years to come.

Program Value

Before launching a DFR program, decide on how you will demonstrate if the program is effective. Anecdotal evidence will suffice during the launch period, but success with hard metrics will need to be demonstrated to allow the program to continue. We encourage you to focus on how the DFR program can affect your top-line metrics on personnel safety, response time, use-of-force, evidence collection, and time to clear calls. These metrics will allow you to assess the program's effectiveness for the community, officers, and leadership.

Operational Excellence

Your organization is practiced at making programs run smoothly. Excellence in DFR requires the same discipline in planning, organizational structure, and practice to deliver consistent positive results. It is important to take one step at a time while building out the complexity of the program.. Proactive program management is key to prepare your organization for the unexpected.

Regulatory

A focus on regulation promotes consistency, predictability, and process standardization to your program. A robust regulatory framework will preempt questions (internal and external) about program operations, funding, regulatory compliance, etc. and keep your program focused on delivering value for your stakeholders. In many cases, DFR policies can closely parallel body-worn cameras and security policies already in place.

Community Engagement and Internal Education

The community must be informed and consulted on DFR activities. The community is the most important stakeholder in the DFR program, and the program will only succeed with their support. Ensure they are involved early in program development and kept informed as you launch your program.

The introduction of drones to an officer's workload is not to be taken lightly. The addition of another piece of technology increases their training load and cognitive stress. The drone program must be seen as a net positive, or you will not be able to roll out a DFR program. Like the community, officers should be engaged early in program development and informed as you launch your program. You may need to alter the staffing of your department to support a DFR program and/or consider including civilian staff in your DFR program.

Starting Considerations

Starting any type of new program takes effort and planning. To make a DFR program successful, you and your team will need to work on many initiatives at once. We encourage you to progress both in sequence and tandem. Many components of the program have an associated lead time and should be started early.

As you start a DFR program, we encourage focusing on a robust understanding of both what (1) what the program looks like upon fruition and (2) how you will communicate and measure your successes. One of the first items to consider is how you will measure your program. This means tracking the information that goes along with operating your program. You will also need to make sure you have a good management structure of what you are working with and who is pushing that work forward.

Program Value

The value derived from your DFR program is the key to its success. Without providing value to your executives and other stakeholders, sustaining the program will be very difficult. This is why we encourage you to think about value tracking as a guiding principle for your program and decide how to track success before starting.

Objectives and Success Metrics

A good example is to focus on the top-line metrics that guide policy at your agency. These metrics play a part in directing resources for everything at your agency, including the DFR program, and should ultimately help executive teams in reporting to the community and their constituency.

Program Managers have the ability to enable **Post-Flight Reports** in Skydio Cloud. Whether the flight was conducted remotely through Remote Flight Deck (RFD) or hand-flown in the field, these reports capture the key details of how the mission supported the call. They include response timelines and flight outcomes, giving Program Managers a consistent record across different workflows. Whether you use the default DFR outcomes questions or customize it yourself, leveraging these reports makes it easier to track your agency's long-term success metrics with reliable, standardized data.

Example metrics of a successful program include:

- Reduce officer-involved shootings by X%
- Reduce officer injuries by X%
- Reduce unnecessary dispatches by X%
- Reduction in use of force claims
- Reduce response time from X minutes to X minutes
- Reduce call clearance time by X%
- Provide overwatch at X% of large fires



NOTE: Consider your success metrics as your “north star.” These are long-term goals and will likely take years to achieve. And, because nothing happens in a silo, it’s important to be aware of other factors that could influence the state of the success criteria as you evaluate performance.

Total Program Cost

DFR is a system which requires more than the procurement of UAV equipment. Ancillary costs for staffing, training, program management, infrastructure, and installation will be part of the program and budgeting for them is essential. Assessing these costs up front, before the procurement of your equipment, will allow you to avoid unexpected costs and have the resources to sustain the program.

Program Manager

You will need to designate someone in your organization to run the DFR program. This person will be responsible for shepherding the program through from the initial implementation through sustainment. For a small program that may mean part of a full-time employee's (FTE) time. For a larger program, that will mean a designated FTE or more. This role is often filled by a sergeant or lieutenant.

The program manager will help establish policy, procedure, schedule training, and work through hardware and software issues when they arise. Additionally, they will work within your organization to integrate your DFR program into your organization's workflows. Skydio provides paid services for this type of work but we still find it is essential to have one of your own to shepherd the program along.

Additional Staffing

The Program Manager will want to tap team leads for tactical expertise, especially when the program manager is not working. These team members may not be full-time on the DFR program but will serve as a technical source of truth for tactical users. These leaders are experts in DFR functions, not at managing a DFR program. This role is often filled by a sergeant with a ratio of about 5:1.

Training

Training is essential for DFR to function effectively. Skydio provides online and in-person training. We recommend both, first online and then in-person. To scale a program, we suggest sending your program manager and/or team leads to become a Skydio certified trainer. This will speed up your training and reduce your long term training costs.

Beyond Skydio Training, we recommend adding DFR training to your in-service training for the year. This will require budgeting extra time for your pilots and officers but we find it is the best way to have a strong base understanding of DFR. Keep in mind that this is an annual expense for the sustainment of your DFR program.

Pilots will need study time and testing budget for the FAA Part 107 exam (described in more detail later). This exam certifies a pilot to fly a UAV for commercial purposes. Most departments decide that the Part 107 is a requirement for their operations. This license must be renewed every two years via a free online course.

Remote Operations Center (ROC)

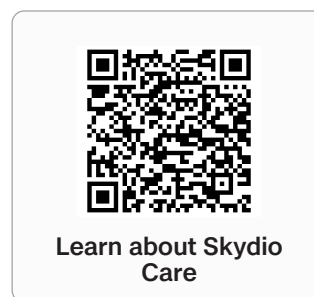
Remote operations are best accomplished with a dedicated Remote Operations Center (ROC). This is often a multi-use facility that includes dispatching capabilities. The analysts working this facility have similar training requirements as the officers. They still need flight certification from the FAA and training on the systems. While not a requirement when commencing a DFR program, we find that all programs immediately see the value in using remote operations and a facility to manage these operations is a necessity.

Staffing depends on the size of your fleet. Additionally, the analysts are likely already working on essential functions. For DFR to function well, you must staff to have a free analyst when the center is busy. The busy time is when the DFR program is likely in operation.

Equipment

The procurement of UAV equipment is usually the first thought when starting a DFR program. We recommend focusing on sustaining the program beyond your initial investment. If one-time funds are being used, programs like SAFE and Care from Skydio will ensure your equipment is up-to-date and flying.

The usage percent of equipment should be less than 100%. Equipment will need time for maintenance, fixes, and use in training courses. Just like a body-worn camera, you will need more than the minimum being used in operation. As a general rule, consider holding back about 15% of your equipment in order to always have spares and the ability to support urgent needs. In a smaller fleet that may mean a higher percentage (e.g. 1 of 5 units) where a larger organization may be a lower percentage (e.g. 10 of 100 units).



Infrastructure and Installation

Physical infrastructure needs should be factored into the cost of a DFR solution. DFR programs from UAVs on patrol to docked drones responding to 911 calls all require investment.

At the most basic level, this means a location to store the equipment required to run the program. UAVs and their associated parts should be stored in a clean climate controlled area (i.e. office) to preserve lifespan of batteries and keep equipment in good shape. The location of spare equipment will depend on your operations, but consider housing equipment in multiple locations across your districts. This will decrease mobilization costs and increase the speed of getting your equipment back out into the field.

Dock installations require more than the procurement of the dock and team for installation. Power and Ethernet is essential. Power may require electrical work to be done that comes at both a cost of time and money. In cooler climates you may need to budget for 220V. Fast and reliable internet is also essential for the success of a dock program. Consider the costs of running conduit, working with your IT department to permit access, and upgrading your internet speed (if necessary).

Integration Work

DFR works best when integrated with your systems. If you do not have in-house teams to integrate systems, we recommend you budget for integration work. Some integrations will natively work, such as Evidence.com. However, there may also be integration work that will require more work and Skydio is there to help via Skydio Extend.



Learn about Skydio
Extend

Operational Excellence

First Group Deployment (Center of Excellence)

We’ve seen multiple types of deployments succeed, but a common trait is starting with a dedicated team of experts. Team members are usually officers first and pilots second. They are internal experts who align closely with program administrators and work informally as ambassadors for the program. This team brings in early wins for the program and demonstrates to the department why DFR is an asset worth investing in.

More implementation work must be done to grow a drone program beyond the first group of users and demonstrate value to the greater organization. For larger-scale success, focus on how the program folds into your organization’s existing workflows and data infrastructure.

Concept of Operations (ConOps)

A Concept of Operations (ConOps) for public safety drone programs provides a high-level overview of how drones will be used to support public safety missions. It describes the operational framework, objectives, and expectations for how drones integrate into various public safety functions like law enforcement, fire services, emergency medical services, and disaster response.

Your ConOps should include:

Purpose and Goals	Defines the why of the program—why it exists and what it aims to accomplish.
Stakeholders	Identifies the various agencies, partners, and key stakeholders involved in the operation.
Use Cases and Scenarios	Provides general operational scenarios where the program will be deployed, explaining how the system will be used (e.g., drone response to emergencies, 911 calls for service, disaster assessment).
Roles and Responsibilities	Outlines the high-level responsibilities of different entities (e.g., Program manager, Chief Pilot, Training coordinator etc).
Operational Context and Flow	Describes the operational environment and how the program fits into the broader mission (e.g., integrating drones into existing public safety workflows). Gives a simplified view of how operations will flow, from mission initiation to conclusion.

The operations will differ between agencies but generally evolve from simple to more complex operations. A common path moves from patrol-led deployments to dock operations in a centralized remote operations center. However, there will be a crossover between operations and the pros/cons of each model. We encourage you to focus on the familiar and layer in novel ConOps as needed.

Policy

Your program will need a formal policy to move from a testing and learning stage to production. This means that the DFR program aligns with other formal agency programs. The program will have unique features that must be addressed in policy. However, most aspects of the program will be familiar from other technology implementations, such as body-worn cameras, traffic cameras, and cruiser maintenance.

Your policy may cover:

Governance	Outlines who is responsible for overseeing the drone program, including roles like the Program Manager, legal advisors, and other stakeholders.
Compliance	Specifies the legal and regulatory requirements that the program must follow (e.g., FAA Part 107, Certificate of Authorization, State and local laws).
Ethical Guidelines	Defines ethical considerations, such as privacy protection, data security, and public safety.
Operational Framework	Sets limits on where, when, and how drones can be used (e.g., no traffic enforcement, investigative surveillance only with a court order).
Program Oversight	Identifies how the drone program will be monitored, audited, and adjusted over time to ensure continuous compliance and performance.
Disciplinary Actions	Outlines consequences for violations of policy, such as unauthorized flights, failure to follow safety procedures, or mishandling of sensitive data.

For an example UAS Policy, refer to **Appendix A - Unmanned Aircraft Systems Policy Example**.

Standard Operating Procedures (SOP)

Standard Operating Procedures, or SOPs, are essential for ensuring consistency and safety in your DFR operations. These procedures cover everything from pre-flight checks and emergency protocols to communication guidelines during a mission. SOPs help standardize operations across your team, ensuring that everyone follows the same steps to achieve reliable and safe outcomes.

Standard Operating Procedures should cover:

Purpose and Scope	Describe the reason for this document and what operations it will cover
Definitions and Terminology	Any terminology that is not part of the common parlance should be identified and defined in this section
Roles and Responsibilities	Who are the members of the team and what are their specific responsibilities
Legal and Regulatory Compliance	Lay out and explain the legal and regulatory framework under which the program will operate in detail
Preflight Procedures	Which calls to respond to, range of DFR flights, minimum battery requirements, deconfliction, relief on station
Inflight Operations	Detailed instructions on how to conduct flights—which calls to respond to, Range of DFR flights, Minimum battery requirements, deconfliction, relief on station
Post-flight Procedures	Data management, equipment check and post flight documentation
Safety Protocols and Risk Management	Risk assessment, emergency procedures and incident reporting
Fleet Management	Scheduled maintenance, record keeping, inventory management
Training and Certification	Initial training, recurrent training, currency requirements
Communication Protocols	Communication between crew members, Communication with members outside the crew
Performance Evaluation, Continuous Improvement	Mission debriefs (hotwash), program audits, SOP review and update

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The first group deployed, which is made up of ambassadors to the program, will be your best resource. Their time in the field will inform the procedures to include in your DFR SOPs.

As the program develops, just like any other new program, expect to update the SOPs as needed. Regularly reviewing and updating these procedures is key to maintaining high standards as your program evolves.



NOTE: *As part of your SOP, include how to talk about the program. Informally, everyone will be interested in the program, so help prepare your team to speak about the DFR program.*

Refer to **Appendix B - Example Operations Checklist** to see example preflight and inflight procedures.

Staffing

Managing the day-to-day activities of a DFR program will require the assistance of an internal agency staff member (or members) to keep it running smoothly. The needs of a DFR program will be similar to other programs and equipment pools that an agency already manages.

These tasks will include:

- Training and certification
- Maintenance, repairs, FAA DroneZone registration
- Usage reporting and pilot currency
- Purchasing
- Distribution of assets

Role	Responsibilities
Program Manager	Day-to-day administration of the program, full time
Flight Ops Coordinator	• Act as the primary decision-maker for flight-related issues during the shift, escalating to the Program Manager if necessary. • Plan, assign, and oversee daily drone missions based on operational priorities and real-time incidents. • Ensure that all flights are conducted in compliance with regulatory requirements, such as FAA regulations and local airspace restrictions. • Monitor ongoing flights to ensure adherence to safety protocols, including maintaining safe distances from obstacles, airspace awareness, and proper handling of emergencies. • Act as the liaison between the drone team and incident commanders or emergency service leaders during operations. • Deconfliction of flights if multiple drones are in the air or multiple agencies have air assets at a single event. • Monitor weather conditions and brief all flights crews
Training Coordinator	• Create and implement training curricula for all crew roles • Organize initial and recurrent training sessions, including flight simulations, emergency response drills, and compliance with legal standards • Maintain records of certifications, training progress, and continuing education for each team member. • Stay updated on the latest advancements in drone technology, software, and regulations to incorporate them into the training program. • Collaborate with the Lead Drone Pilot and Program Manager to adapt training to evolving operational needs and lessons learned from past missions.

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Role	Responsibilities
DFR Pilot	• Respond to calls for service • Monitor aircraft to ensure safety
Fleet Manager	• Conduct routine maintenance, repairs, and troubleshooting of drone hardware and software. • Perform pre-flight and post-flight inspections to ensure equipment is operational. • Keep inventory of spare parts, batteries, and other essential supplies. • Coordinate with manufacturers or vendors for warranty repairs, software updates, and technical support. • Maintain detailed logs of maintenance activities and drone performance.
Analyst	Analyst working in a Remote Operations Center / Real Time Information Center
Executive Sponsor	Guides and promotes the program towards agency level goals



NOTE: Depending on the size of your program, some roles may not be required; OR one or more of the above roles may be filled by a single person. When staffing your program, consider factors such as special details for officers that can create scheduling complexities.

As the program grows in size and complexity (many vehicles and docks) it can be difficult to manage everything in house. We encourage a model of in-house expertise **combined with an embedded Skydio program manager**. The embedded manager will focus on implementing and maintaining the systems, providing up-to-date training, and managing data flow needs. The internal agency staff will focus on policy, SOPs, and internal reporting.

Training, Currency, and Proficiency

Initial training, continuing education, and currency and proficiency standards are all key to success. Remember, proficient pilots make successful programs. Training should be focused on the specific needs of your program's policies and SOP. We suggest scheduling regular training sessions, workshops, and certification programs.

The technology and tactics involved in DFR operations are constantly evolving, and it's important that your team stays up-to-date with the latest developments. After initial training, you will need to establish currency and proficiency requirements for your pilots.

Currency A pilot is considered current if they are fully competent and can handle any situation while flying. Currency is about a pilot's actual skills and ability to perform the tasks required for a flight and is measurable.

Proficiency A pilot should be considered proficient if they meet the minimum certification requirement. When establishing currency requirements, consider:

- Part 107
- Regular (e.g. annual) recertification on the DFR systems used by the pilot

For more information about proficiency and recommended requirements, refer to **Appendix C - Currency**.

Risk Mitigation and Safety

Risk management is a critical component of DFR operations. Drones, like any other technology, can fail. Humans can make mistakes. It's essential to have safety protocols in place to mitigate these risks. This includes pre-flight safety checks and having contingency plans for various scenarios. Ensuring that your team is trained in these protocols and understands the risks involved is vital for safe and effective drone operations.

Risk mitigation may include:

Risk Assessment Worksheet (RAW)	These worksheets are used to assess potential risks to the operation and mitigations to these risks.
Flight briefs and shift handovers	These should be completed at the beginning of every shift. Information like weather, activity, air traffic, equipment issues, connectivity issues, etc.
Crew Day and Crew Rest	Implementing structured crew day and crew rest requirements helps ensure that personnel remain alert, focused, and capable of performing their duties effectively, reducing risk of accidents. “Crew Day” is the maximum number of consecutive hours a crew member is allowed to be on duty. This includes all work-related activities. “Crew Rest” is defined as the mandatory period of rest between shifts. Crew must refrain from any work-related activities—this time is designated for adequate recovery, sleep, and relaxation.
Emergency Procedures	Have well defined procedures in place for emergency situations, including standard settings per your SOP.
Training	Strong and effective training program that includes initial training, sustainment training, re-certifications, proficiency and currency, Crew Resource Management (CRM)
Incident reporting and investigation	Have a well defined plan for investigating and reporting incidents to relevant stakeholders.

Flight Data and Evidence Management

Treatment of data generated by the drone in alignment with the policy and SOPs is essential for the program to succeed. Policies associated with viewing and preserving flight data (telemetry) and media are of utmost importance and must be decided upon before launching a DFR program, and should be guided by state and local laws.

Important Considerations

- What are your current video retention policies (e.g. with body-worn cameras)?
- Do you have a system to store data?
- Will you record the entire flight?
- How will you instruct officers to tag an evidentiary critical video?
- How will you treat training versus production usage data?

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Program Managers should make use of the data management settings available in Skydio Cloud. These settings allow Organization Admins to define which types of media are uploaded—such as images, preview video, audio and raw video, or 3D scan data—and whether files are removed from the drone’s SD card after upload. Admins can also enable watermarks so that date, time, and drone details are automatically applied to photos and videos.

- Aligning these controls with your agency’s evidence and retention policies helps create consistency across the fleet
- Standardized settings ensure that data from both Remote Flight Deck missions and hand-flown flights is treated the same way, reducing ambiguity for pilots and simplifying downstream reporting

The screenshot displays the 'Media' settings page in the Skydio Cloud interface. On the left is a sidebar with a list of settings categories: Settings, General, Users, Groups, Distribution Lists, Devices, Sites, Flight Settings, Network, Media (highlighted), Licenses, Alerts, Live Streaming, DFR, Axon Integration, DFR Outcomes Report, Transparency Dashboard, Developer, API Tokens, and Webhooks. The main content area is titled 'Media' with the subtitle 'Manage how the vehicle captures and uploads media.' It contains three sections: 'Upload Policy' with a descriptive paragraph and four toggle switches for 'Images', 'Preview Video', 'Audio & Raw Video', and '3D Scan Data'; 'After Upload' with one toggle switch for 'Delete files from the vehicle's SD card after upload'; and 'Watermarks' with a descriptive paragraph and two toggle switches for 'Photos (Color JPG)' and 'Videos (Color and Thermal MP4)'.

Settings

- General
- Users
- Groups
- Distribution Lists
- Devices
- Sites
- Flight Settings
- Network
- Media**
- Licenses
- Alerts
- Live Streaming
- DFR
- Axon Integration
- DFR Outcomes Report
- Transparency Dashboard
- Developer
- API Tokens
- Webhooks

Media

Manage how the vehicle captures and uploads media.

Upload Policy

Select what is automatically uploaded when the vehicle has internet connectivity. Skydio will use this information to provide Media Sync and retain it indefinitely as part of your account. Visit the [Skydio Privacy Policy](#) for detailed information.

- ☒ **Images**
Upload photos captured on the device
- ☒ **Preview Video**
Upload smaller, preview video files (LRV) captured on the device for the full flight
- ☒ **Audio & Raw Video**
Upload audio and raw video files (MP4) captured on the device. One flight may be split into multiple MP4 files
- ☒ **3D Scan Data**
Upload models and metadata generated from 3D scans

After Upload

- ☒ **Delete files from the vehicle's SD card after upload**

Watermarks

Manage watermark visibility on media. When enabled, the date, time, and drone details will appear in the top left corner of your content. These settings apply to X10 only.

- ☒ **Photos (Color JPG)**
- ☒ **Videos (Color and Thermal MP4)**

Transferring Media

It's essential to implement a standard method for moving data from drones to your desired storage location in order to maintain a chain of custody. Data can be transferred directly from the drone via the on-board SD card or via Skydio Media Sync (recommended). No matter the process, it's essential to document and understand the chain of custody implications.

About Media Sync

Media Sync is a direct transfer of media from the vehicle to your desired location without any interference. When the drone is connected to power, it will connect to your agency network and upload the data types to you assigned in Skydio Cloud. If connected to Evidence.com, the data is passed through Skydio Cloud (not stored) and stored in the CJIS-compliant Evidence.com.

Media Sync simplifies the audit trail and avoids any suggestion that evidence may have been tampered with. When linked to a CJIS-compliant evidence management system like Evidence.com, your DFR program will follow public safety standards.

To set up Media Sync, the administrator of your account will need to add the credentials for your organization's network or enable team members with access to your network via Ethernet. You can test Media Sync on your network with one vehicle and work with your IT department and Skydio to ensure robust data flow. MAC address filtering is a common way to ensure compliance with your cybersecurity protocols.



**How to use
Media Sync**



**How to Integrate Skydio
Cloud with Axon Evidence**

Live Streaming

Live streaming is often the first and most powerful way to show executive leadership why DFR is so valuable for Public Safety. As mentioned, aligning the DFR program with existing means of communication is critical. For example, if your organization uses a single pane of glass solution (e.g., Fusus, Genetec, Axon Respond, etc.) to stream video, make sure the drone stream is integrated into that system.

Important Considerations

- What are your current video retention policies (e.g. with body-worn cameras)?
- Do you have a system to store data?
- Will you record the entire flight?
- How will you instruct officers to tag an evidentiary critical video?
- How will you treat training versus production usage data?

The consumption of live-streamed video will depend on the person's role in the agency. Executives often consume video in offices or a real-time operations center. Officers often need to remain vigilant in the field and may or may not be watching a screen during a call, so radio descriptions may be more effective. While streaming video continues to be extremely important to all parties, the method of using the data is different.

About Live Streaming

There are several ways for a Skydio drone to live stream, but the most important focus for successful operation is how the live stream connects to the Internet. The connection can depend on your style of operations.

- Cellular service purchased - the live stream will connect to the internet via either streaming directly from the vehicle or the controller (both are cellular enabled)
- No cellular service purchased - the controller must be connected to a 2.4 GHz internet source (e.g., cell phone or hotspot)

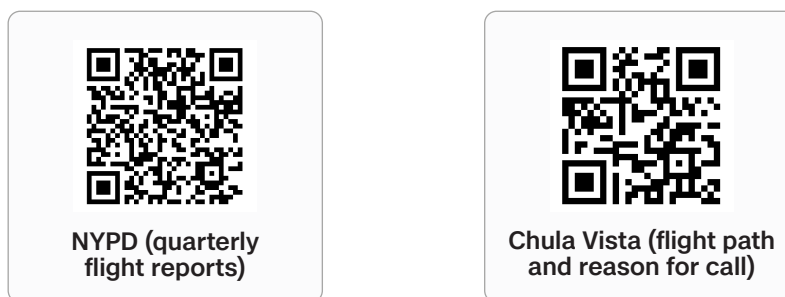
Live streaming will only work as well as the internet service at that location. The video stream resolution will be up to 720p with a strong network signal connection (> 5 Mbps). The quality of the live video stream depends on the strength of the signal connection from the drone to the controlling device and the pilot's internet connection. The pilot can optimize the video feed for the pilot or the viewer. If you are having trouble with live streaming, check the internet speed at that location before troubleshooting further.

While setting up the desired streaming location (e.g., Remote Operations Center), we highly recommend you utilize Skydio ReadyLink. ReadyLink allows an end user to see all Skydio drone live streams and switch between them independently of the drone operators.

Flight Tracking

The use of flight telemetry is directly related to regulatory compliance. As an organization, you will likely work under a COA, and stipulations in your COA will require you to report on usage. A standardized process for flight tracking will allow you to quickly and easily file reports to the FAA under your COA.

In addition to regulatory compliance, flight tracking is often very important to your community. As part of your community engagement efforts, public disclosure of where and why you fly shows transparency and builds trust. Homegrown and commercial solutions exist to aid in these efforts. A couple of different approaches can be found below.



Skydio Cloud includes basic flight tracking by default. This includes flight records by pilot and vehicle along with telemetry. If you have a mixed fleet and/or want to include more information about fleet records and maintenance, we suggest integrating with a third party flight tracking service. Several options are available that have already integrated with Skydio and require minimal setup.

Tracking in CAD

The DFR program needs to be tracked like other assets on calls to accurately associate its successes and failures. Often, the practical approach is to integrate your drones directly into your Computer Aided Dispatch (CAD) system. We encourage you to avoid treating the DFR program in parallel to normal operations, direct integration is best. Direct integration will allow both better tracking and better dispatching of the vehicle to the location of the call.



NOTE: Direct CAD integration with Skydio requires custom work. Reach out to your Skydio team to discuss CAD integration options.

Connecting Systems (Integrations)

DFR operations are only as useful as the pathways to disseminate the data. We encourage you to align with your existing systems. Promoting existing systems with additional functionality is easier than implementing novel systems.

Integrated systems can take several different forms. Each will be using data directly from Skydio and will provide value to your agency and partners.

Use partner-built Integrations

Hand-selected partners have built integrations into their applications for Skydio Extend to help with fleet management, photogrammetry, video streaming, real-time operations, construction, data transfers, triggers, flight telemetry, and more. View our catalog at skydio.com/integrations-catalog.

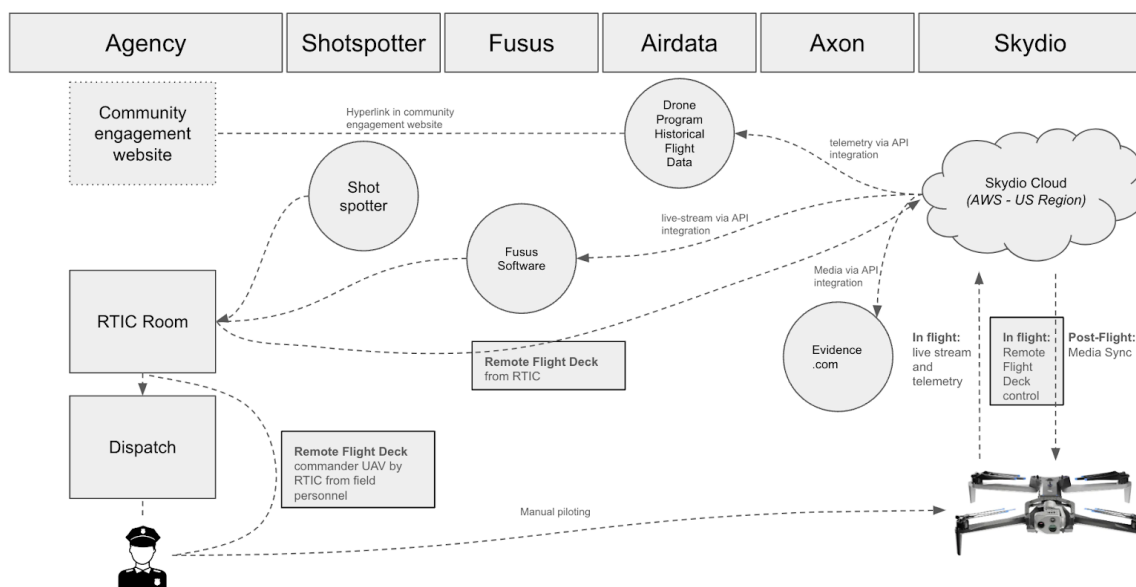
Develop your own integrations

If you need an even more customized integration, Skydio Extend lets you build your own. You'll have access to our full suite of dev tools – including APIs, documentation, and a development sandbox experimentation. Learn more about our developer tools at apidocs.skydio.com.

Let our experts build a custom solution.

Our expert integrations specialists are ready to help your team build custom end-user integrations, set up partner-built integrations, or modify existing Skydio-build workflows, all without having to engage with multiple outside vendors or IT teams.

Integrations can take time and technical resources and usually involve multiple parties (IT, security, executives). Appropriate scoping of needs and communication of concerns early in your DFR journey will promote timely results.



Example data flow

Operational Metrics

Your Success Criteria are your north star—these are long-term goals that will take years to achieve and are affected by a myriad of other factors.

Tracking and measuring these high-level criteria (e.g., lives saved, reduced response time) can therefore be a difficult task. Start with smaller, more immediately achievable goals and track things like number of flights, total flight hours, and number of calls responded to. Watch your program grow and highlight your wins!

Some operational metrics you can start tracking right away include:

- # of flights
- # of flight hours (by pilot, by mission)
- # of calls responded to
- # of wins
- Mission types
- Total area covered

Post-Flight Reports provide a standardized record of each DFR flight and should be incorporated into your agency's tracking practices. [Post-Flight Reports are easily customizable](#), but you may also use the default DFR Outcomes Questions.

When enabled, the report is completed immediately after landing as part of the Remote Flight Deck (RFD) workflow. For hand-flown flights with the X10 Controller, reports are attached within **Flights > Reports** in Skydio Cloud to be completed at a later time.

Program Managers should set clear expectations for how each workflow contributes to program reporting and, if appropriate, coordinate with Organization Admins to grant controller pilots Cloud access (as a Cloud User role) so they can complete reports directly. Consistent use of these reports ensures every mission is documented in a uniform way, regardless of how it was flown.

Regulatory

Operating a Drone as First Responder (DFR) program requires FAA approval. While many agencies begin with a Part 107 remote pilot certificate, Part 107 has limits (visual line of sight, altitude, and location restrictions) that make it insufficient for DFR operations.

To conduct DFR, your agency must obtain a Part 91 Beyond Visual Line of Sight (BVLOS) waiver along with an airspace authorization (Certificate of Authorization, COA). Together, these approvals enable you to launch and operate drones as public aircraft in real-world response scenarios.

Skydio's Regulatory Team has developed a step-by-step guide to help you through this process. This guide outlines:

- **Eligibility requirements** for becoming a Public Aircraft Operator (PAO) and Public Safety Organization (PSO)
- **How to request a Part 91 BVLOS Certificate of Waiver (COW)**, including both 200' shielded operations (recommended starting point) and 400' non-shielded operations with detect-and-avoid technology
- **How to obtain a COA** through the FAA's CAPS system once you have your waiver

By pursuing these approvals, agencies can move beyond Part 107 limitations, expand their operational capabilities, and position their DFR programs for long-term success.



Read the full Part 91
Guide

Community Engagement and Internal Education

Community Engagement

Community engagement and building trust is crucial for the success of your DFR program. Your agency will already be an expert at community engagement—we encourage specific DFR-focused community engagement to start as soon as possible and be treated as a guiding principle. Engaging with the public through community meetings, demonstrations, and educational campaigns can help build trust and support for your program.

You can begin by consulting the 5 C's, developed by DRONERESPONDERS in collaboration with Skydio:

1. Community Engagement and Transparency
2. Civil Liberties and Privacy Protection
3. Common Operating Procedures
4. Clear Oversight and Accountability
5. Cybersecurity

Each of these principles should already be addressed in your SOP creation, policies, and external talking points.

Another way to reinforce transparency is through the use of the **Transparency Dashboard** in Skydio Cloud. This tool allows Program Managers to present aggregate information about flight activity and outcomes in a format that can be shared with stakeholders and the public.

- Highlighting program usage through the dashboard can help address community concerns, reinforce accountability, and demonstrate the value of the program in a clear and accessible way

Internal Education on DFR

All programs, no matter how useful, need internal buy-in from the team and leadership along with a strong explanation of why you are allocating resources.

Officer enablement is a strategic program requirement to make the program a success. DFR is a novel concept and comes with a lot of excitement that will help get the program off the ground. More enablement will be needed to fully roll out a robust DFR program.

Associated with this enablement should be concrete examples of why an officer would benefit from DFR. Quantitative measures of successes at program start will be harder to come by (although you need to be set up to measure them) so qualitative measures in the form of “success stories” and other records of usage are highly encouraged.



NOTE: *A submittal form for success stories is a great way to lower the barrier to pilots reporting their wins.*

A key focus on internal enablement should be thinking about DFR like all other tools and skills. Work to make DFR enablement part of your academy work and include it as part of your in-service training.

Production Usage

Successful DFR operations provide value to your agency and, in turn, your community. Once the program is live, you will find areas that need improvement and opportunities to update policies and procedures. We encourage you to continue thinking about the strategic program requirements as you go live and continually improve your operations.

- Program Value (identify new use cases)
- Operational Excellence
- Regulatory
- Community Engagement

A continued focus on high-value areas in production is essential for DFR. Live streaming, evidence management, and flight tracking are three good examples. The basic operation will drive continued value for the agency and is the most challenging. Tertiary needs will arise and be a good use of resources, along with great success stories about the program. However, the holistic value of a drone is best demonstrated by how the program affects top line metrics that your program focuses on. This is why the focus on reporting on drone usage through your existing systems of record.

Evaluation and Optimization

A DFR program is not stagnant and will have opportunities to improve and/or change the ConOps over time. A deployment that focuses on patrol-led deployment may see advantages of dock-based operations. A deployment that focuses heavily on a centralized remote operations center may find a need for tactical use cases. The key is to listen to your users, track the value of the use case, and iterate as needed.

While you and your team will learn what improvements are needed over time. Listed below are some concepts that you may focus on.

- Locations of high radio frequency (RF) interference, robust/poor cell service, and the best locations for flight
- Event overwatch best practices
- What classification of calls require service and what does not

This is not an exhaustive list and we encourage you to focus on what works best for your organization. Skydio is happy to help talk through how novel DFR applications will affect and complement your existing operations.

Glossary

Term	Definition
BVLOS	Beyond Visual Line of Sight. Refers to the operation of unmanned aircraft systems (UAS), such as drones, when they are outside of the pilot's direct line of sight.
COA	Certificate of Authorization, issued by the Air Traffic Organization to a public operator for a specific unmanned aircraft activity.
ConOps	Concept of Operations. A high-level strategic document that outlines the overall vision, goals, and framework of how a program will operate.
DFR	Drone as First Responder. The concept of using drones to respond to emergency situations immediately upon receiving calls for service.
FAC	Flight Activity Category. Determines the amount and type of activity a crew member should perform in a given time period.
Part 107	FAA regulations for small unmanned aircraft operations other than recreational flying.
Part 91	FAA regulations for general operations and flight rules (crewed and uncrewed aircraft). Operations under Part 91 can open up more advanced ways of operating drones, including operating Beyond Visual Line of Sight of the Pilot and operating over human beings.
RAW	Risk Assessment Worksheet. Used to assess potential risks to the operation and mitigations to these risks.
ROC	Remote Operations Command. Central command for DFR operations. The ROC should include command and control infrastructure, situational awareness tools, data analysis stations, and environmental data.
SOP	Standard Operating Procedure. Detailed, step-by-step instructions that outline the specific processes and procedures to be followed by personnel to carry out operational tasks safely, consistently, and effectively.
Telemetry	Data gathered about the aircraft and its surroundings that is sent back to the operator or ground control station (GCS).
UAS	Unmanned Aircraft System. This term encompasses the unmanned aircraft, the ground control station, and any other supporting equipment used to conduct flight operations.



Appendix

A - Unmanned Aircraft Systems Policy Example

B - Example Operations Checklist

C - Currency

D - Tactics, Techniques, and Procedures (TTPs)

Appendix A - Unmanned Aircraft Systems Policy Example

Purpose

The purpose of this policy is to:

- Establish guidelines for the use of unmanned aerial systems (UAS) by [AGENCY NAME]
- Establish guidelines for the storage, retrieval, and dissemination of data captures by the UAS.

Applicability

This policy applies to all [AGENCY NAME] employees who perform or manage unmanned aircraft operations. Any drone flown by [AGENCY NAME] personnel, during their scheduled work shift or for official [AGENCY NAME] business, must adhere to this policy.

Definitions

sUAS	Small Unmanned Aircraft System, this term encompasses the unmanned aircraft, the ground control station, and any other supporting equipment used to conduct flight operations. Small specifically refers to an aircraft that weighs less than 55 pounds.
sUA	Small Unmanned Aircraft. This term refers to the drone by aircraft itself, not the controller or other associated equipment.
Drone	A common term for sUA
GCS	Ground Control Station. This is the part of the sUAS that the Remote Pilot interacts with to operate the aircraft (a handheld controller, a computer web-browser, <u>etc</u>)
Part 107	Federal rules governing the use of commercial, small UAS operations in the United States
Part 91	Federal Aviation Administration rules that govern general operating and flight rules in the National Airspace System
COA	Certificate of Authorization, issued by the Air Traffic Organization to a public operator for a specific unmanned aircraft activity.
FAA	Federal Aviation Administration
NAS	National Airspace System

Refer to FAA Advisory Circular 107-2 for additional terms and definitions.

Privacy

The use of the UAS potentially involves privacy considerations. Absent a warrant or exigent circumstances, operators and observers shall adhere to FAA altitude regulations and shall not intentionally record or transmit images of any location where a person would have a reasonable expectation of privacy. Operators and observers shall take reasonable precautions to avoid inadvertently recording or transmitting images of areas where there is a reasonable expectation of privacy. Reasonable precautions can include, for example, deactivating or turning imaging devices away from such areas or persons during UAS operations.

Procurement

The UAS Program Manager is responsible for reviewing and approving drone and supporting equipment purchases in accordance with [AGENCY NAME] procurement policies.

Responsibility

[List executive level roles and responsibilities here with examples including -]

1. UAS Committee members of [AGENCY NAME] stakeholders

A cross-functional group of [AGENCY NAME] personnel that provides a forum to coordinate and discuss matters relating to the use of UAS.

- a. Review proposals concerning approval levels for UAS operations, qualifications, training;
- b. Review UAS policies;
- c. Facilitate the annual summary of UAS operations;
- d. Facilitate UAS procurement and insurance;
- e. Recommend changes or improvements to this Policy.

2. The UAS Program Manager / Program Coordinator is responsible for administrative functions of the UAS program such as:

- a. Applying for and managing Certificates of Authorization (COA)
- b. Financial aspects of the program including determining sources of funding and development of a budget
- c. Hiring of all other UAS program roles
- d. Procurement of UAS and other support equipment
- e. Developing strategic plans with cross-functional company teams to identify how UAS will be used at the company
- f. Company-wide reporting including operational summaries, community engagement activities, and the value of the UAS operations
- g. Ensuring flight crews are appropriately qualified and trained
- h. Developing data policies including storage and security

The UAS Program Manager may work closely with, and leverage, other departments at the Agency.

3. **Remote Pilots** are responsible for the safe operation of an unmanned aircraft and must be qualified and trained in accordance with [AGENCY NAME] policy.

Authorized Uses

[AGENCY NAME] Remote Pilots may deploy drones for the following purposes:

1. [LIST]

Prohibited Uses

[AGENCY NAME] will not use drones for the following purposes:

1. To conduct random surveillance activities
2. [OTHER]

UAS will not be weaponized.

UAS Data

Data collected by the UAS shall be managed and retained in accordance with [describe data management process here, consider using protocols for other types of sensors like body cameras]

Operations

Operations shall be conducted in accordance with [AGENCY NAME] UAS General Operating Manual and other agency policies. Operations will adhere to all Federal Aviation Regulations (Part 107, Part 91, and others) and any relevant state and local regulations.

[list any other relevant agency policies such as code of conduct]

Contact

For questions or feedback about this policy, contact [WHO]

Appendix B - Example Operations Checklist

Step		Workflow Details
Start of Shift		
1	Pre-flight	VO: use the "X10 Preflight" section in this Support Article as the checklist
2	Pre-flight: all 3 drones one at a time	- VO <> RPIC start phone call - VO: get all 3 drones online & powered on (so that RPIC can do start of shift checks) - RPIC: Open settings tab to verify settings: - Return flight speed: max (~35 mph) - Height ceiling: 200 - Return height: 200 ft - Return: up & over - Return: Absolute - Lost comms timeout: 10 seconds - Lost Connection: Return - Amount of time to hover before returning: 10s - Behavior after return: Land - Amount of time vehicle will hover before landing: 90s - Fly to point height: 200 - RPIC: <i>"pre-flight checks complete"</i>
3	RPIC: DroneSense mission	RPIC: select mission "911 calls" in DroneSense co-pilot app
4	Place drones	- VO: place drones (all in shade): 1 drone (e.g. Nickname: Sky2) - ready for flight: powered on & charging not doing media sync (not in range of a saved wifi network), in shaded area ready for flight 2 drones - backups: the drone powered on and doing media sync over ethernet
5	Drone comes online	RPIC: in Skydio Cloud, observe Sky2 drone comes online & enter Remote Flight Deck

Appendix

Step		Workflow Details
Each Flight		
1	Pre-flight: Airspace / Regulatory	- RPIC: Check remote terminal is configured properly, check TFR/NOTAM/Weather using UASidekick VO: determine area around drone is safe for launch (check Airspace, weather, etc.)
2	RPIC: waiting for 911 call	RPIC: Observes list of incoming calls & identifies call they'd like to respond to
3	RPIC <> VO	RPIC: <i>"Pilot to VO, prepare for launch. flying to (direction)"</i>
4	VO <> RPIC	VO places powered on drone on Hoodman Landing Pad & communicate via radio <i>"10-4, (Aircraft name) will be aircraft"</i>
6	RPIC: waiting for 911 call	- RPIC: Fleet Page -> Sky2 -> Fly Now - RPIC locates that call in the RFD calls for service list - RPIC: confirms that call is in serviceable area RPIC: approves Remote ID request on mobile phone. Keeps open for duration of flight. (phone call is in the background)
7	911 Call of interest identified	RPIC selects "Fly here" from three dot menu for call for service Marker
8	Request Launch	RPIC <i>"(aircraft name) Requesting launch"</i>
9	Launching	- VO <i>"VO to Pilot, (Aircraft name) on the pad, ready and clear."</i> - RPIC selects "launch" to launch drone
10	Live Streaming	Live stream is visible in Skydio Cloud, ReadyLink, DroneSense, Genetech
11	VO during flight	VO: Continue to scan airspace and environment
12	Flight To Point	Drone flies autonomously to point - RPIC conducts PTZ while en-route

Appendix

Step		Workflow Details
13	Respond to incident	- Once arrives at incident marker, RPIC serves as first responder, which may include: - Updating dispatch/officer to clear a “non-incident” (e.g. vehicle no longer blocking roadway) Providing SA to officers on ground via radio - RPIC may leverage functionality including: PTZ, manual flight, thermal, zoom/crawl, etc. - RPIC: Monitor battery % required to arrive on scene given current wind conditions - This percentage of battery will be required to return home safely
14	VO ↔ RPIC	RPIC: <i>“drone returning home”</i>
15	Return to Launch	- RPIC: selects “Return” to initiate return to launch - For safe operation, your drone should have 20% battery after landing Drone returns to above launch in a hover VO: watches the return. If necessary, commandeers with RFD (recommended) or controller (last resort) to ensure safe return <i>RPIC: hit the “land in place” button.</i>
16	Land	RPIC: <i>“drone landing”</i>
17	Post-flight	VO: conduct vehicle post-flight check per NYPD protocol - RPIC: updates CAD as needed VO transitions drone to be a replacement drone - places drone in shade & connects to Ethernet for media sync VO prepares a different drone (e.g. Sky1) to now be the drone ready for flight VO prepares a 3rd drone to be the next replacement drone (moves it from ethernet to power with a full battery)
18	[as needed] Report bugs & upload logs	RPIC: submit entry in customer support portal & upload logs if issues are detected. (via Fleet Page -> upload support logs and Media Sync)
End of Shift		
	End of Shift Report	VO: completes end of shift report including pictures of drone, bug reports
<i>Italics</i> = radio comms between RPIC & VO Bold = happens in physical world		

Appendix C - Currency

Flight Activity Category (FAC)

DFR pilots are broken up by Flight Activity Category (FAC) to designate the pilot's currency requirement. Officers assigned to respond to daily 911 calls (daily pilots) will have a higher requirement. Whereas managers who tend to hold additional duties and responsibilities and who are ultimately responsible for the overall success of the program will have less tactical/operational duties and require lower currency standards. Records keeping and pilot status will be vital to maintaining your programs effectiveness.

FAC Level 1 (Daily Pilots)

Every 30 days, pilots must accumulate

- 10 flight hours
- 10 Launches & Landings

FAC Level 2 (Management)

Every 60 days, pilots must accumulate

- 5 flight hours
- 5 Launches & Landings

A pilot whose currency lapses, must complete a flight alongside a department trainer to be signed off as "current", prior to returning to normal flight duty.

How can pilots achieve their currency minimums?

The below are some examples that demonstrate how the level of activity might assist the pilot in achieving their currency minimums.

1. Scenario 1 | Pilot completes (5) 20-minute missions per shift for 10 days
2. Scenario 2 | Pilot completes (5) 10-minute missions per shift for 20 days
3. Scenario 3 | Pilots can fly for currency hours outside of mission requirements when applicable.

Currency Waivers

There may be situations that prevent pilots from meeting currency requirements. Consider collateral duties, the human element, and other exogenous factors (e.g. medical emergencies, patrol duties, PTO/leave). DFR program managers should create a waiver process that is fair and prescriptive. This process should not be abused or used to circumvent or avoid currency requirements.

Appendix D - Tactics, Techniques, and Procedures (TTPs)

Tactics, Techniques, and Procedures (TTPs) dictate how your drones should be employed in order to maximize effectiveness. These are usually aircraft/platform dependent but due to the similar nature of drones, can often apply to multiple different drones types. This is often its own document but may be included in your SOP.

TTPs vary based on mission, intent, environment, etc.

Relief On Station

A relief on station is exactly what it sounds like. A secondary drone arrives on scene to relieve the primary drone. This can happen for many reasons, including:

- Low battery
- Emergency
- Pilot or equipment ability
- Battery swap

No matter the reason, the intent is to maintain visual of the subject/area for an extended period of time. So think...

- Serving a warrant
- Barricaded subject
- Following a subject

It's important to accurately calculate transit time for both drones in this situation and to not forget about potential exogenous factors like wind, air traffic, etc.

Regulatory restrictions/limitations can hinder this type of operation, so keep this in mind when submitting COA or Waiver paperwork.

Masking

Masking is a technique used to conceal the aircraft's location or noise signature. This obviously is meant for more covert operations.

Sun Masking — When the pilot positions the drone in between the subject and the sun.

- The intense brightness of the sun will hide the drone's location, effectively making the drone invisible.
- This will be most effective on sunny days with very minimal clouds and no overcast.

Terrain Masking — Position the aircraft in front of terrain (e.g. trees, hill, mountains, buildings) to conceal the drones location.

- This will mostly only work at lower altitudes, which can be a hindrance depending on the situation.
- If the aircraft lights are on this might render this tactic useless.
- Stop at structure can be used to “peek” around terrain

Sound Masking — In more urban environments, this may not be needed as the ambient city sounds might drown out the drones noise. However, in more suburban and rural areas, position the drone downwind from the subject to have the wind carry the sound away.

- This is most effective on windier days.

