

Leading Safer Cities

Using Drones for Emergency Response

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The first minutes

Earlier information supports safer decisions

Before arrival

An aerial observation may locate the incident and identify visible hazards.

At the scene

Command compares the view with ground reports and directs the response.

After the incident

Preserved imagery can support documentation and operational review.

A citywide mission portfolio

Public safety partners share a defined purpose

Police	Call assessment, searches, incident documentation
Fire and EMS	Exterior assessment, access, rescue support
Emergency management	Damage assessment and resource prioritization
Leadership	Mission limits, staffing, funding, and accountability

Two deployment models

Different models require different service commitments

Operating model	On-scene support	Drone as First Responder
Launch	Team arrives and assesses the scene	Established launch site receives eligible calls
Best fit	Flexible incident and search locations	A defined area with repeated response needs
Service requirements	Field crew, equipment, mission coordination	Crew coverage, connectivity, site support
Shared responsibilities	Flight authority, safety, privacy, and useful reporting	Flight authority, safety, privacy, and useful reporting

Missing-person search

Stafford County, Virginia. September 18, 2017

Emergency

An 18-year-old student failed to return home after school.

Drone contribution

A thermal camera detected a possible person near the school track.

Reported result

The drone team directed deputies to the student, who was unharmed.

Leadership lesson

Aerial detection must lead to ground verification and a safe return.



Conceptual image, not incident photography

Fire assessment

Bronx, New York. March 6, 2017

Emergency

A fourth-alarm fire in a six-story Bronx building.

Drone contribution

FDNY sent live roof imagery to the incident commander.

Reported result

The commander said the images helped guide decisions as the roof began to fail.

Leadership lesson

Give command a useful view alongside crew reports. Images alone cannot prove safety.



Conceptual image, not incident photography

Water and shoreline rescue

Minneapolis, Minnesota. May 14, 2026

Emergency

A missing resident became trapped in Shingle Creek, at risk of hypothermia.

Drone contribution

Thermal imagery located him and guided officers to the creek.

Reported result

Officers pulled him out. EMS treated him and transported him to hospital.

Leadership lesson

Link the aerial location to rescue crews and medical care. The drone supports the full response.



Conceptual image, not incident photography

Floods and disaster recovery

North Carolina. Hurricane Florence, September 2018

Emergency

Florence flooding disrupted roads and access across the state.

Drone contribution

15 NCDOT teams flew over 260 missions and collected over 8,000 images and videos.

Reported result

A shared dashboard supported emergency response, detours, repairs, and public warnings.

Leadership lesson

Plan how imagery reaches decision makers. Confirm road conditions before reopening routes.



Conceptual image, not incident photography

EMS access and medical delivery

Douglas County, Colorado. December 2024

Emergency

A ten-year-old boy had been missing on his ATV for hours.

Drone contribution

The SAR team found him, used a loudspeaker, and delivered food and water.

Reported result

The team established contact and supplied the child during the response.

Leadership lesson

Communication and delivery require trained crews, safe payload procedures, and operating authority.



Conceptual image, not incident photography

Police call assessment

Chula Vista, California. Chief’s account reported February 2020

Emergency

A 911 caller reported a man waving an apparent gun outside a taco shop.

Drone contribution

Video showed him using the object to light a cigarette.

Reported result

Officers received the update and made an arrest without incident, according to police.

Leadership lesson

Early observation can change an approach. Verify the full situation before enforcement decisions.



Conceptual image, not incident photography

Public events and emergency access

A defined mission with visible boundaries

Mission

Observe access routes and crowd movement tied to a specific safety need.

Information

Video may reveal congestion or an obstructed emergency vehicle route.

Command decision

Coordinate traffic, medical staging, and ground verification.

Limits

Flights over people require applicable authority. Policy must protect lawful expression and sensitive activities.



Illustrative scenario

Crash and scene mapping

Tippecanoe County, Indiana. Operational use since 2018

Operational need

Investigators must document crash geometry and vehicle positions.

Drone contribution

The sheriff’s office uses programmed flights to collect overlapping scene images.

Reported result

Its captain reports about 10 minutes of flight setup and 20 minutes of image capture.

Leadership lesson

Collection time is only part of scene work. Validate measurements and preserve evidence.



Conceptual image, not incident photography

Hazardous-material assessment

Remote observation can support a cautious assessment

Mission

Observe from an approved position outside identified hazards.

Information

Video may help locate a visible release, affected access, or container markings.

Command decision

Support specialist assessment, staging, and requests for additional resources.

Limits

A camera does not identify an unknown substance. Vapors, ignition risk, contamination, and equipment limits may prevent flight.



Illustrative scenario

Dispatch and incident command

Every mission needs a request, an owner, and a useful report

Request	Dispatch links an eligible call to a defined information need.
Launch	The crew checks readiness, conditions, and operating authority.
Report	A named command recipient receives location, observation time, and confidence.
Close	The team records the mission, preserves required material, and reviews problems.

What the sensors can tell us

Capabilities and uncertainty travel together

Tool	Useful information	Important limits
Visible camera	Scene context and location	Obstructions, lighting, viewing angle
Thermal sensor	Thermal differences that merit verification	Contrast, canopy, surfaces, interpretation
Mapping tools	Relationships between visible scene features	Collection quality and validated accuracy
AI assistance	Suggestions for attention or review	Errors, bias, and human verification

Parts 107, 91, and proposed 108

The mission and aircraft determine the operating pathway

Part 107	Civil small UAS under 55 lb with payload. Certified remote pilot and applicable approvals.
Part 91	General operating rules. Qualifying public aircraft missions use applicable FAA waivers and authorizations.
Part 108 proposal	Framework for routine BVLOS. Pending review as of October 2, 2026, with no current authority to launch.
Pilot and aircraft	Part 107 knowledge currency every 24 calendar months. Register, mark and meet applicable Remote ID requirements.

Part 107 flight limits

Baseline limits apply unless specifically waived

Visual line of sight	Maintain the required unaided view; corrective lenses are allowed. Video alone is insufficient.
Altitude and speed	Normally ≤400 ft AGL; structure exception permits up to 400 ft above it within 400 ft horizontally. Maximum 100 mph.
Weather minimums	At least 3 statute miles visibility; stay 500 ft below and 2,000 ft horizontally from clouds.
Pilot responsibility	Yield to other aircraft. Check airworthiness, weather, crew, links, and landing options before launch.

Part 91 public aircraft operations

Public aircraft status requires statutory qualification

Eligibility	Assess the aircraft and government mission under 49 USC §§40102 and 40125. Agency ownership alone is insufficient.
Agency responsibility	Establish pilot qualification and aircraft airworthiness processes. Follow the applicable Part 91 rules and approvals.
Public safety waivers	Eligible PAO/PSO applicants can seek §91.113 relief using obstruction shielding or acceptable detect-and-avoid systems.
Approved conditions	CoW/A terms govern altitude, area, equipment, airspace access and reporting. Confirm coverage before launch.

Proposed Part 108 and BVLOS

Status checked October 2, 2026: pending federal review

Intended purpose	A proposed framework for routine BVLOS, including civic-interest uses that support public safety.
Proposed oversight	Operator permits or certificates, aircraft airworthiness acceptance and documented operating responsibilities.
Proposed safeguards	Detect-and-avoid, command links, ground risk, controlled-airspace access and supporting traffic-management services.
Current planning	Continue under valid Part 107 or Part 91 authority. Recheck final publication, effective dates and transition terms.

Airspace classes for drone missions

Assess the airspace at the intended flight altitude

Class G	Uncontrolled airspace. Part 107 usually needs no §107.41 authorization, but restrictions and flight limits still apply.
Class B, C, D	Controlled airport airspace. Part 107 requires prior FAA authorization when the flight enters it.
Class E	Prior approval under §107.41 applies to the airport-designated surface area. Other Class E begins above specified floors.
Class A	Generally 18,000 ft MSL to FL600. Outside routine small-drone emergency response planning.

Airspace approval and restrictions

Authorization applies to a location, altitude and operating conditions

Flight footprint	Check the intended area and altitude against controlled-airspace boundaries and current restrictions.
LAANC or DroneZone	Use LAANC where available; otherwise request FAA authorization through DroneZone. Follow approved ceilings and conditions.
TFRs and special use	Review NOTAMs, disaster TFRs, restricted areas and security restrictions. A public safety purpose alone grants no access.
Incident coordination	Coordinate with helicopters and command. Separate airspace approval from operational waivers.

Operational waivers and airspace access

Each approval addresses a defined part of the operation

Airspace access	LAANC or DroneZone authorization under Part 107. A facility-map grid ceiling is guidance, not approval.
Part 107 waivers	Common relief: §107.31 BVLOS, §107.39 people, §107.145 moving vehicles and §107.35 multiple aircraft.
Application evidence	Describe the operation, hazards and mitigations. New Part 107 operational waiver applications use Aviation Safety Hub.
Part 91 documents	Use the appropriate Part 91 waiver/CoW/A pathway. A Part 107 waiver does not transfer to a Part 91 flight.

Night, people, and moving vehicles

Mission urgency does not remove operating conditions

Night operations	Part 107 night knowledge requirements + anti-collision light visible for at least 3 statute miles. Airspace approval still applies.
Flights over people	Use an eligible Category 1–4 aircraft and meet its conditions, an applicable exception, or a specific waiver.
Crowds and traffic	Category 3 cannot fly over open-air assemblies. Flights over moving vehicles have additional limits.
Safer scene planning	Use exclusion areas, controlled access and alternate routes. Confirm aircraft eligibility before promising coverage.

BVLOS and emergency approvals

Build advanced authority before it is needed

BVLOS / docked response	A remote video link does not establish VLOS. Secure the required waiver or public aircraft authority and meet its conditions.
Urgent SGI requests	FAA Special Governmental Interest process can expedite qualifying emergency approvals. Approval must be granted.
Time-sensitive contact	FAA System Operations Support Center: 202-267-8276. Follow the approved mission limits.
In-flight emergency	§107.21 allows necessary deviation for an in-flight emergency; it is not advance authority for a planned response.

Privacy, security, and public trust

The city must explain its limits and enforce them

Purpose	Written mission limits, prohibited uses, and approval for exceptions.
Information	Controlled access, audit logs, retention rules, evidence preservation, and disclosure procedures.
Contracts	City data ownership, vendor access, incident reporting, and secure exit terms.
Accountability	A usable complaint process, compliance reviews, and meaningful public reporting.

Readiness requires people and sustained funding

The aircraft is one part of the service

People	Qualified crews, relief coverage, dispatch training, and protected practice time.
Proficiency	Mission exercises, sensor interpretation, failure drills, and recurrent assessment.
Recurring cost	Batteries, maintenance, connectivity, software, storage, and replacement.
Oversight	Legal review, records work, security support, and program evaluation.

A phased implementation

Expansion follows demonstrated readiness

01 **Define**

Select priority missions, owners, and baseline measures.

02 **Prepare**

Complete policy, approvals, training, data controls, and public engagement.

03 **Pilot**

Limit the service area and mission scope until performance supports expansion.

04 **Decide**

Continue, correct, pause, or expand based on documented evidence.

Measures that guide investment

Activity, reliability, and value require different evidence

Measure	What to record	What leadership learns
Useful information	Call or request to actionable report	Consistency by call type and location
Reliability	Availability, declined flights, cancellations	Reasons the service could not help
Safety and trust	Near misses, deviations, complaints	Corrective actions and resolution
Operational value	Documented changes to response	Baseline comparison and full cost

A leadership decision under pressure

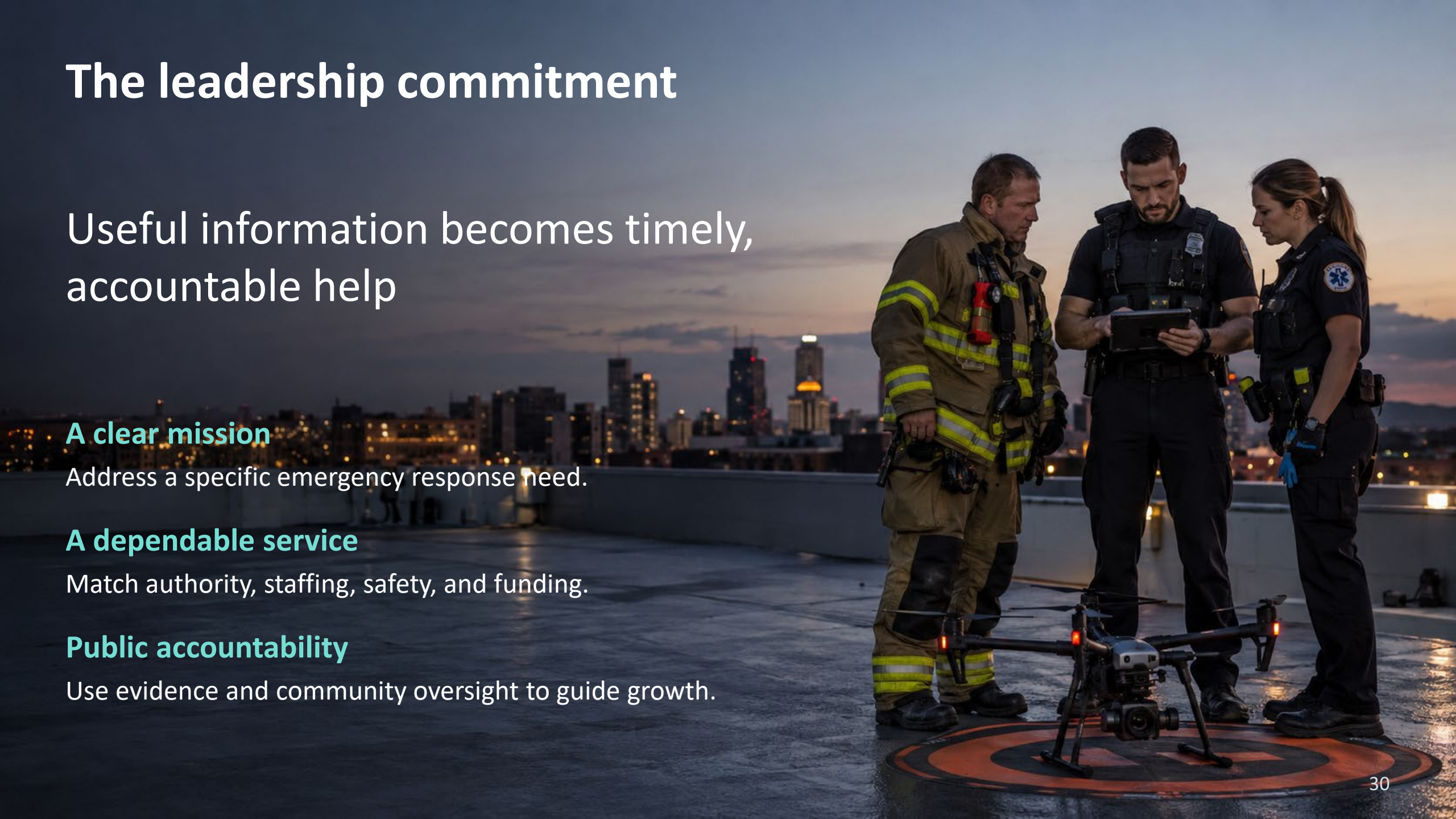
An illustrative missing-person search after heavy rain

Promising finding	A possible person appears in thermal imagery. Ground verification is pending.
Changing conditions	Video becomes intermittent, wind increases, and a helicopter requests access.
Decision	Coordinate aviation, assess flight safety, and continue the ground search.

What is your first decision?

The leadership commitment

Useful information becomes timely, accountable help



A clear mission

Address a specific emergency response need.

A dependable service

Match authority, staffing, safety, and funding.

Public accountability

Use evidence and community oversight to guide growth.