



Summary and Comparison of Regional Unmanned Aircraft System (UAS) Policies



Regional Response Team 10 Northwest Area Committee
UAS Task Force



Regional Disaster Preparedness Organization
UAS Task Force

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Introduction / Purpose

Introduction/ Purpose

The purpose of the Northwest Area Committee Unmanned Aircraft System (UAS) Task Force is to evaluate drone capabilities and usage policies in Washington, Oregon and Idaho and provide recommendations to the [Region 10 Regional Response Team and Northwest Area Committee](#) on air space restriction options, public messaging to communicate airspace usage, and other tools to be considered for implementation into the *Northwest Area Contingency Plan* (NWACP). With UAS constituting one of the most significant new and emerging technologies, it has the potential to be an effective response tool, while also creating challenges to ensure a safe airspace when being used by both responders and the public. The evaluation of UAS capabilities, policies and anticipated benefits and challenges during a response is necessary to ensure the NWACP remains current, provides guidance and improves readiness in the Northwest region.

The use of drones (also known as sUAS) for personal / recreational and commercial use has greatly increased over the past 6 years. There are more than one-million drones registered in the United States. ([Fortune Magazine, 2018](#)) Roughly 75% of these are owned by personal / recreational users. This paper summarizes the information gathered on regional government and industry policies and provides a comparison of the various policies.

Recommendations

Given the present status of legislation / regulations and significant differences between existing state Policies, Bills and Acts, the Northwest Area Committee Unmanned Aircraft System (UAS) Task Force recommends that future legislative actions be developed consistent with:

- ✈️ CFR Part 107 (FAA Guidelines)
- ✈️ Existing Washington State Policy Guidelines
- ✈️ State of California’s – Natural Resource Agency Department of Fish and Wildlife - Unmanned Aircraft System (UAS) Operations Manual

Note: “Congress has provided the FAA with exclusive authority to regulate aviation safety, the efficiency of the navigable airspace, and air traffic control, among other things. State and local governments are not permitted to regulate any type of aircraft operations, such as flight paths or altitudes, or the navigable airspace.” ([Federal Aviation Administration, 2018](#))

The capabilities and policies associated with UAS are rapidly and constantly evolving. This reality means Unified Commands and Incident Commanders will oftentimes have to make decisions regarding the safe use of UAVs based on the incident’s specific circumstances and their best judgment. This white paper and its appendices should be posted on the RRT10/NWACP webpage as a resource for an IC/UC to quickly ascertain the issues involved with UAS and provide examples of effective plans and tools for their use.





General Definitions

aircraft

Any contrivance invented, used, or designed to navigate, or fly in, the air.

altitude (ATTI)

The height measured from directly above ground (AGL) is the *absolute altitude*. The height measured from mean sea level (MSL) is the *true altitude*.

autonomous aircraft

An aircraft that does not require pilot intervention in flight operations.

autopilot

The component of an aircraft that is capable of guiding movement of the aircraft without real-time human guidance

avionics

The science and technology of electrical and electronic devices in flight.

ceiling

Height above ground or water of the base of the lowest layer of cloud below 20,000 feet [~6000 meters] which covers more than half of the sky.

Certificate of Waiver or Authorization (COA)

The terms “certificate of waiver” and “certificate of authorization” mean a Federal Aviation Administration grant of approval for a specific flight operation. [FAA]

collision avoidance

Action taken to prevent flying into a fixed object or another aircraft. [see *detect and avoid* and *flight modes*]

command and control (C2)

The exercise of authority and direction by the pilot.

commercial operation

An aircraft operation conducted for business purposes (mapping, security surveillance, wildlife survey, aerial application, etc.) other than commercial air transport, for remuneration or hire.

control station (CS)

An interface used by the remote pilot or the person manipulating the controls to control the flight path of the small UA. [FAA]

detect, sense and avoid (DSA)

DSA can be defined as: Detect-is something there? Sense-is it a threat/target? Avoid-maneuver to miss. (also *detect and avoid D&A*, and *sense and avoid*)

drone

Unmanned aircraft. Also:

- ✂ *bird (slang)*
- ✂ *craft (slang)*
- ✂ *eye in the sky / spy in the sky (slang)* [surveillance drone]
- ✂ *flying machine*
- ✂ *flying robot*
- ✂ *micro aerial vehicle (MAV)*
- ✂ *mini aerial vehicle*
- ✂ *remotely operated aerial vehicle (ROAV)*
- ✂ *remotely operated aircraft (ROA)*
- ✂ *remotely piloted aerial vehicle (RPAV)*
- ✂ *remotely piloted aircraft system (RPAS)* [EASA]
- ✂ *remotely piloted vehicle (RPV)*
- ✂ *small unmanned aircraft (SUA)*
- ✂ *small unmanned aircraft system (sUAS)*
- ✂ *small unmanned surveillance aircraft (SUSA)*
- ✂ *uncrewed aerial vehicle (UAV)*
- ✂ *uninhabited aerial vehicle (UAV)*
- ✂ *unmanned aerial vehicle (UAV)*
- ✂ *unmanned aircraft system (UAS)* [FAA & ICAO]
- ✂ *unmanned flying machine (State of Oregon)*

envelope

The maximum performance parameters of an aircraft.

failsafe function

If a lost link occurs, the aircraft enters failsafe mode in it either returns to launch or lands autonomously.

Federal Aviation Administration (FAA)

The Federal Aviation Administration (FAA) is the agency of the United States Department of Transportation responsible for the regulation and oversight of civil aviation within the U.S., as well as operation and development of the National Airspace System. Its primary mission is to ensure safety of civil aviation.



General Definitions

first person view (FPV)

A technique that enables an operator to assume a cockpit view using a display screen or video goggles, with a wireless, real-time connection to an on-board video camera.

fixed-wing aircraft

An aircraft capable of flight using forward motion that generates lift as the wing moves through the air. [also *airplane*, *aeroplane* or *plane*. See *rotary-wing aircraft*]

flight plan (FP)

The operator's plan for the safe conduct of the flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed. [also *operational flight plan*]

flyaway

Unintended flight outside of operational boundaries (altitude/airspeed/lateral) as the result of a failure of the control element or onboard systems, or both. Flyaways do not have or do not initiate failsafe mode to return to launch [also *fly away*]

flyaway protection system

A system that will return the aircraft safely to the surface, or keep the aircraft within the intended operational area when the command and control link between the pilot and the aircraft is lost. [see *failsafe function*]

geofence

A virtual barrier indicating how far a GPS quadcopter can fly from its home point. Geofence settings are usually height above ground as well as total distance from the home point. [see *flight modes*]

Global Positioning System (GPS)

A global system of U.S. navigational satellites developed to provide precise positional and velocity data and global time synchronization for air, sea, and land travel.

ground control station (GCS)

[see *ground station* and *remote pilot station*]

homing

[see *failsafe function*, *flyaway protection system*, *return to launch*, and *flight modes*]

hybrid

An aircraft made by combining two different elements. Common hybrid drones combine VTOL with fixed wing; or electric and gas engines.

International Civil Aviation Organization (ICAO)

The International Civil Aviation Organization (ICAO) is a United Nations specialized agency that works with 191 nations, global industries and aviation organizations to develop international *Standards and Recommended Practices* which are then used by the nations when they develop their legally-binding national civil aviation regulations.

line of sight (LOS)

Many small aircraft are line-of-sight machines, meaning the person controlling the device must be in direct sight of the aircraft so that radio signals can be transmitted back and forth. Most larger aircraft are not line-of-sight aircraft because the radio signals that control them are bounced off of satellites or manned aircraft.

lost link

Loss of command and control link contact with the remotely piloted aircraft such that the remote pilot can no longer manage the aircraft's flight.

minimum safe altitude (MSA)

The public domain for airspace starts at the minimum safe altitude (MSA). In general, people's property ends at the highest of the underlying land's trees, buildings, fences, or how high the owner can use the airspace in connection with the land.

mission plan

The route planning, payload planning, data link planning, and aircraft emergency recovery planning for a flight.

multi-rotor

An aircraft with two or more main rotors. [also *multicopter*]

National Airspace System (NAS)

The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations



General Definitions

and procedures, technical information, and manpower and material.

near miss

An incident in which personal injury or damage to equipment, property, or the environment nearly occurred, but was averted.

non-collaborative things

Moving and stationary objects in the air (such as balloons and birds) and on the ground that are not electronically communicating with the aircraft for collision avoidance.

operational control

The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of safety of the aircraft and the regularity and efficiency of the flight.

payload

All elements of a remotely piloted aircraft that are not necessary for flight but are carried for the purpose of fulfilling specific mission objectives.

permanent areas The term “permanent areas” means areas on land or water that provide for launch, recovery, and operation of small unmanned aircraft. [FAA]

remote controller

The handheld device used to operate the UAV and typically consisting of a radio transceiver, GPS and flight controls. Remote controllers may also include FPV screens and camera controls.

remote pilot (RP)

The person who manipulates the flight controls of a remotely-piloted aircraft during flight time.

remote pilot station (RPS)

[see *ground control station*]

remote Pilot in Command (remote PIC)

A person who holds a remote pilot certificate with an sUAS rating and has the final authority and responsibility for the operation and safety of an sUAS operation conducted under part 107. [FAA]

return to launch (RTL)

The return of an aircraft to its original launch location. Also known as *homing* and often performed as a safety procedure in the event of a technical malfunction or emergency. [also *return to home*] [see *flight modes*]

rotary-wing aircraft

A heavier-than-air flying machine that uses lift generated by wings, called rotor blades, that revolve around a mast. [see *fixed-wing aircraft*]

rotor

A hub with a number of radiating airfoils (blades) that is rotated in an approximately horizontal plane to provide the lift for a rotary-wing aircraft. [see *propeller*]

sense and avoid capability

The term “sense and avoid capability” means the capability of an unmanned aircraft to remain a safe distance from and to avoid collisions with other airborne aircraft. [FAA] [see *detect, sense and avoid*]

situational awareness (SA)

An all-encompassing term for keeping track of what’s happening when flying.

small unmanned aircraft (UA)

An unmanned aircraft weighing less than 55 pounds, including everything that is onboard or otherwise attached to the aircraft, and can be flown without the possibility of direct human intervention from within or on the aircraft. [FAA]

small unmanned aircraft system (sUAS)

A small unmanned aircraft and its associated elements (including communication links and the components that control the small UA) that are required for the safe and efficient operation of the small UA in the National Air Space. [FAA]

test range

The term “test range” means a defined geographic area where research and development are conducted. [FAA]

track

Actual flight path of aircraft above ground.



General Definitions

UAS mission

A single-day or near consecutive multi-day UAS operation. One or more UAS Missions make up a UAS Project.

UAS pilot

A certification received once someone completes the requirements to allow them to operate UAS for the Department.

UAS project

A single or multi-outing UAS operation to benefit a targeted project or outcome. A UAS Project is made up of one or more UAS Missions.

unmanned aerial vehicle (UAV)

An unmanned aerial vehicle, commonly known as a drone and referred to as a remotely piloted aircraft by the International Civil Aviation Organization, is an aircraft without a human pilot aboard. Its flight is controlled either autonomously by onboard computers or by the remote control of a pilot on the ground or in another vehicle. The typical launch and recovery method of an aircraft is by the function of an automatic system or an external operator on the ground.

unmanned aircraft (UA)

An aircraft operated without the possibility of direct human intervention from within or on the aircraft. [FAA]

unmanned aircraft system (UAS)

The term “unmanned aircraft system” means an aircraft and associated elements (including communication links and the components that control the aircraft) that are required for the pilot in command to operate safely and efficiently in the national airspace system.

[FAA] [also remotely piloted aircraft system]

Note: *remotely piloted aircraft system* is the recommended term for the International Civil Aviation Organization.

Unmanned Aircraft System Traffic Management (UTM)

While incorporating lessons learned from the well-established Air Traffic Management (ATM) system, which grew from a mid-air collision over the Grand Canyon in the early days of commercial aviation, the UTM system would enable safe and efficient low-altitude airspace operations by providing services such

as airspace design, corridors, dynamic geofencing, severe weather and wind avoidance, congestion management, terrain avoidance, route planning and re-routing, separation management, sequencing and spacing, and contingency management. [NASA]

visual line of sight (VLOS)

Unaided (corrective lenses and/or sunglasses excepted) visual contact between a pilot in command and an unmanned aircraft sufficient to maintain safe operational control of the aircraft, know its location, and be able to scan the airspace in which it is operating to see and avoid other air traffic or objects aloft or on the ground.

visual observer (VO)

A person acting as a flight crew member who assists the small UA remote PIC and the person manipulating the controls to see and avoid other air traffic or objects aloft or on the ground. [FAA]

(Stephens, 2018)





General Acronyms

AC FAA Advisory Circular [US]	FPV First Person View	ROA Remotely Operated Aircraft
AGL Above Ground Level	GCS Ground Control Station	RP Route Plan / Remote Pilot
ATC Air Traffic Control	GPS Global Positioning System	RPA Remotely Piloted Aircraft
ATM Air Traffic Management	ICAO International Civil Aviation Organization	RPAS Remotely Piloted Aircraft System
BRLOS Beyond Radio Line of Sight	IFR Instrument Flight Rules	RTH Return to Home
BVLOS Beyond Visual Line of Sight	LiPo Lithium-ion polymer battery	RTL Return to Launch
C2 Command and Control	LOS Line of Sight	sUAS small Unmanned Aircraft Systems
CFR Code of Federal Regulations	MSA Minimum Safe Altitude	UA Unmanned Aircraft
COA Certificate of Authorization [also <i>Certificate of Waiver</i>]	MSL Mean Sea Level	UAS Unmanned Aircraft System
CS Control Station	NAS National Airspace System	UAV Unmanned Aerial Vehicle
D&A / DAA Detect and Avoid	NOTAM Notice to Airmen	USCG (CG) United States Coast Guard
DSA Detect, Sense and Avoid	PIC Pilot in Command	UTM UAS Traffic Management System
FAA Federal Aviation Administration [US]	PII Personally Identifiable Information	VFR Visual Flight Rules
FAR Federal Aviation Regulations	RC Radio Controlled / Remote Controlled [also <i>R/C</i>]	VLOS Visual Line of Sight
FP Flight Plan	RLOS Radio Line of Sight	VO Visual Observer



Federal UAS Policy Overview

The following section is from the FAA “Fact Sheet – Small Unmanned Aircraft Regulations (Part 107).”

Operating Requirements

The small UAS operator manipulating the controls of a drone should always avoid manned aircraft and never operate in a careless or reckless manner. You must keep your drone within sight. Alternatively, if you use First Person View (FPV) or similar technology, you must have a visual observer always keep your aircraft within unaided sight (for example, no binoculars). However, even if you use a visual observer, you must still keep your unmanned aircraft close enough to be able to see it if something unexpected happens. Neither you nor a visual observer can be responsible for more than one unmanned aircraft operation at a time.

You can fly during daylight or in twilight (30 minutes before official sunrise to 30 minutes after official sunset, local time) with appropriate anti-collision lighting. Minimum weather visibility is three miles from your control station. The maximum allowable altitude is 400 feet above the ground (AGL), and higher if your drone remains within 400 feet of a structure. The maximum speed is 100 mph (87 knots).

You can't fly a small UAS over anyone who is not directly participating in the operation, not under a covered structure, or not inside a covered stationary vehicle. No operations from a moving vehicle are allowed unless you are flying over a sparsely populated area. Operations in Class G airspace are allowed without air traffic control permission. Operations in Class B, C, D and E airspace need ATC approval. [See Chapter 14 in the Pilot's Handbook.](#) [see LAANC]

You can carry an external load if it is securely attached and does not adversely affect the flight characteristics or controllability of the aircraft. You also may transport property for compensation or hire within state boundaries provided the drone – including its attached systems, payload and cargo – weighs less than 55 pounds total and you obey the other flight

rules. (Some exceptions apply to Hawaii and the District of Columbia. These are spelled out in Part 107.)

You can request a waiver of most operational restrictions if you can show that your proposed operation can be conducted safely under a waiver. The FAA will make an online portal available to apply for such waivers.

Pilot Certification

To operate the controls of a small UAS under Part 107, you need a remote pilot airman certificate with a small UAS rating, or be under the direct supervision of a person who holds such a certificate

You must be at least 16 years old to qualify for a remote pilot certificate, and you can obtain it in one of two ways:

-  You may pass an initial aeronautical knowledge test at an FAA-approved knowledge testing center.
-  If you already have a Part 61 pilot certificate, other than a student pilot certificate, you must have completed a flight review in the previous 24 months and you must take a small UAS online training course provided by the FAA.

If you have a non-student pilot Part 61 certificate, you will immediately receive a temporary remote pilot certificate when you apply for a permanent certificate. Other applicants will obtain a temporary remote pilot certificate upon successful completion of a security background check. We anticipate we will be able to issue temporary certificates within 10 business days after receiving a completed application.

UAS Certification

You are responsible for ensuring a drone is safe before flying, but the FAA does not require small UAS to comply with current agency airworthiness standards or obtain aircraft certification. Instead, the remote pilot will simply have to perform a preflight visual and operational check of the small UAS to ensure that safety-pertinent systems are functioning properly. This includes checking the communications link between the control



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station and the UAS. The UAS must also be registered.

Respecting Privacy

Although the new rule does not specifically deal with privacy issues in the use of drones, and the FAA does not regulate how UAS gather data on people or property, the FAA is acting to address privacy considerations in this area. The FAA strongly encourages all UAS pilots to check local and state laws before gathering information through remote sensing technology or photography.

As part of a privacy education campaign, the agency will provide all drone users with recommended privacy guidelines as part of the UAS registration process and through the FAA's **B4UFLy** mobile app. (Know Before You Fly, 2018). The FAA also will educate all commercial drone pilots on privacy during their pilot certification process; and will issue new guidance to local and state governments on drone privacy issues. The FAA's effort builds on the **privacy "best practices"** (PDF) the National Telecommunications and Information Administration published last month as the result of a year-long outreach initiative with privacy advocates and industry.

Other Requirements

If you are acting as pilot in command, you have to comply with several other provisions of the rule:

-  You must make your drone available to the FAA for inspection or testing on request, and you must provide any associated records required to be kept under the rule.
-  You must report to the FAA within 10 days any operation that results in serious injury, loss of consciousness, or property damage (to property other than the UAS) of at least \$500.

(Federal Aviation Administration, 2015, June 21)

Code of Federal Regulations

The Code of Federal Regulations, Title 14: Aeronautics and Space, Part 107—Small Unmanned Aircraft Systems is online at <https://www.ecfr.gov/cgi-bin/text-idx?SID=e331c2fe611df1717386d29eee38b000&mc=true&node=pt14.2.107&rqn=div5>

Low Altitude Authorization and Notification Capability (LAANC)

LAANC is the Low Altitude Authorization and Notification Capability, a collaboration between FAA and Industry. It directly supports UAS integration into the airspace.

It provides access to controlled airspace near airports through near real-time processing of airspace authorizations below approved altitudes in controlled airspace. (AIRMAP, 2018)





Waivers / Authorizations

Waiver / Authorization

The FAA will issue waivers/authorizations to certain requirements of Part 107 if an applicant demonstrates they can fly safely under the waiver without endangering people or property on the ground or in the air.

The FAA will strive to review and issue decisions on waiver/authorization requests within *90 days*. Processing times will vary based on the complexity of the request.

Special Governmental Interest

First responders and others entities responding to emergency situations may be eligible for expedited approval through a **Special Governmental Interest (SGI) process**, as described, below:

UAS operations are an increasingly important tool for first responders and other entities responding to natural disasters and other emergency situations. In some cases, UAS operators who need to fly response missions, which provide crucial benefits to the public good and address exigent circumstances, may need to secure waivers or authorizations from the FAA more quickly than practicable through normal processes. Examples of these response missions, which may qualify for expedited support through the FAA's Special Governmental Interest (SGI) process, are outlined below:

- ✈ Firefighting
- ✈ Search and Rescue
- ✈ Law Enforcement
- ✈ Utility or Other Critical Infrastructure Restoration
- ✈ Incident Awareness and Analysis
- ✈ Damage Assessments Supporting Disaster Recovery Related Insurance Claims

- ✈ Media Coverage Providing Crucial Information to the Public

Through the SGI process, the FAA may expedite the issuance to qualifying UAS operations of: 1) addendums to pre-existing Certificates of Waiver or Authorization (COA); or 2) waivers and authorizations to Part 107 operators.

The FAA may rapidly approve through its SGI process COA addendums and Part 107 authorizations and waivers UAS operations that:

- ✈ Fly in airspace (including controlled airspace and disaster Temporary Flight Restrictions) and/or at altitudes not otherwise permitted
- ✈ Fly Beyond Visual Line of Sight (BVLOS)
- ✈ Fly at night

(Federal Aviation Administration, 2018)





Regional UAS Policy Overviews

The Task Force was able to obtain UAS policy information from the following regional sources:

- ✿ United States Coast Guard, Sector Columbia River and Sector Puget Sound
- ✿ State of Idaho
- ✿ State of Oregon
- ✿ State of Washington
- ✿ Industry

United States Coast Guard

The present policy statement from the USCG is as follows: Coast Guard (CG) units are authorized to seek photo or video imagery services from commercial UAS operators, in accordance with established contracting procedures. Prior to initiating any UAS contract obligations units must notify COMDT (CG-711) and the next level chain of command prior of their intent to contract services.

Requirements of Contractors: CG units contracting for UAS services, and their servicing legal offices, will ensure that the contract specifies that the commercial UAS operator shall be solely responsible for the operation of the UAS and comply with applicable FAA laws and regulations

The following apply for any UAS services: The UAS may be used for photo or video imagery in support of infra- structure inspections, environmental observation, pollution response, post-storm survey, ice survey, communications support, and public relations.

Commercial UAS support for other missions, including law enforcement, intelligence, defense operations, or search and rescue requires explicit COMDT (CG-711) and chain of command approval.

Additionally, units may also partner with local, State, or Federal government agencies that operate UAS to obtain information from their UAS operations in support of Coast Guard operations.

The UAS shall not be used to collect any Personally Identifiable Information (PII).

CG units contracting for UAS services, and their servicing legal offices, will ensure that the contract specifies that the commercial UAS operator shall be solely responsible for the operation of the UAS and comply with applicable FAA laws and regulations.

State of Idaho

As of the date of this White Paper, the Task Force was unable to locate UAS policies for the Idaho Office of Emergency Management. The State issued Idaho Statute, Title 21 Aeronautics, Chapter 2 [State Law for Aeronautics, 21-213.](#): The statute states....(2) (a) Absent a warrant, and except for **emergency response** for safety, search and rescue or controlled substance investigations, no person, entity or state agency shall use an unmanned aircraft system to intentionally conduct surveillance of, gather evidence or collect information about, or photographically or electronically record specifically targeted persons or specifically targeted private property.

State of Oregon

As of the date of this White Paper, Oregon Department of Environmental Quality had not released approved policies for UAS. The Oregon Department of Transportation *UAS Operations Manual* covers aircraft, pilot, operations, and many other considerations. ([State of Oregon Department of Transportation, 2017](#)).



Regional UAS Policy Overviews

Oregon Revised Statutes (ORS), the codified laws, regulate unmanned aircraft systems.

ORS 387.300 Definitions to 837.390 Applicability and 837.995 Crimes involving unmanned aircraft systems

- 1) A public body that operates an unmanned aircraft system shall establish policies and procedures for the use, storage, accessing, sharing and retention of data, including but not limited to video and audio recordings, resulting from the operation of the unmanned aircraft system.
- 2) The public body shall post the following information on the public body's website or otherwise make the following information available to the public: (a) The policies and procedures established under this section. (b) The text of ORS 192.501.
- 3) The policies and procedures established under this section must include: (a) The length of time data will be retained by the public body. (b) Specifications for third party storage of data, including handling, security and access to the data by the third party. (c) A policy on disclosure of data through intergovernmental agreements.

Modifies provisions relating to unmanned aircraft systems, commonly known as drones. Declares emergency, effective on passage. Has specific definitions of flying for commercial purposes and what is interpreted as an invasion of the public privacy.; specific legal remedies and actions are included for invasion of privacy; this also contains information on what a Public Body (agency) must do on a yearly basis as far as record keeping of flights and data retention.

Prohibits the use of UAS over private property in a manner that intentionally , knowingly or recklessly harasses or annoys the owner or occupant of the property. Further, HB 3047 specifies that UAS may be used by law enforcement to reconstruct an accident scene. <https://www.oregonlaws.org/ors/837.300>

ORS 498.128 Use of Drones for pursuit of wildlife prohibited

The Oregon State Fish and Wildlife Commission is required to adopt rules prohibiting the use of drones for the pursuit of wildlife. <https://www.oregonlaws.org/ors/498.128>

State of Washington

As of the date of this White Paper, Washington Ecology Spills Program and Washington Department of Fish and Wildlife had not released approved policies for UAS. The only available guidance is from the Office of Privacy and Data Protection and does not take account for considerations applicable to an emergency response action or for the data-sharing that would be expected in a Unified Command structure.

Washington State Policy Guidelines for Unmanned Aircraft Systems issued by the Office of Privacy and Data Protection, State of Washington: The advent and widespread use of drones has raised many complex questions in Washington State, resulting in different legislative proposals to regulate the use of drones—unmanned aerial vehicles—by state agencies and programs.

The following is designed to guide policy makers and stakeholders as they develop policy proposals. It reflects input from the Executive Branch, Office of the CIO, DOT, and a broad group of agencies. The



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guidelines are not listed in any particular order or priority.

1. Definition of “Drones”

Definition should apply to unmanned aerial vehicles controlled by a remote operator. Sample definition: “An unmanned aircraft that is operated without the possibility of direct human intervention from within or on the aircraft.”

2. Law Enforcement and Respect for Civil Rights

Fourth Amendment requirements must apply to the use of evidence derived from drone surveillance. This is grounded on probable cause and the need to obtain a warrant in advance of use for law enforcement purposes, if such evidence is to be introduced in a court of law.

- A. Drones should not be used to monitor activities protected by the First Amendment or lawful exercise of other Constitutional rights.
- B. Law enforcement personnel should balance use of drones against other means of gathering information in a particular investigative need, assessing whether such alternative means are less intrusive than the deployment of drones.

3. Purpose of use

The purpose of use of a particular flight should be recorded and maintained by the applicable agency.

- A. Drones should only be used in connection with properly authorized investigations and activities, unless they are authorized for on-going use by documented Agency policy.
- B. Exceptions to stating a purpose of use in advance of actual use can be made

for emergencies such as natural disasters, terrorism and “hot pursuit” of crimes.

- C. Data collected by drones must be subject to existing state and federal laws and regulations regarding the privacy of personal information.

4. Data Minimization

The video images and other data derived from surveillance applications should be minimized in terms of review and retention, consistent with state records retention requirements. Only data pertaining to the original purpose of the drone flight should be retained. Agencies should set retention schedules consistent with the fulfilment of the original purpose of the drone flight.

5. Federal Law

- A. FAA regulations regarding registration of drones, safety and no-drone zones must be followed.
- B. The state acknowledges existing “open view” doctrines, as set forth by the Supreme Court and other legal authorities.

6. Policy Management

- A. Drone guidelines and agency implementation should be reviewed annually to keep up with technology and respond to citizen concerns. Such review should take place within any agency that operates drones.
- B. Drone guidelines should be published in print and online by each agency. OCIO will retain the guidelines in a central location.
- C. The state should conduct public education and outreach regarding drone policies and operations by state agencies.



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- D. The state should not share drone data with the federal agencies without judicial authorization or review.
- E. The state should not share drone data with local governments or between state agencies, unless such sharing is specified within the original purpose of the deployment.

Note: Congress has provided the FAA with exclusive authority to regulate aviation safety, the efficiency of the navigable airspace, and air traffic control, among other things. State and local governments are not permitted to regulate any type of aircraft operations, such as flight paths or altitudes, or the navigable airspace. (FAA, 2018, July 20)

Private Sector

Integration Pilot Program

The Unmanned Aircraft System (UAS) **Integration Pilot Program** (IPP) is an opportunity for state, local, and tribal governments to partner with private sector entities, such as UAS operators or manufacturers, to accelerate safe UAS integration.

Low Altitude Authorization and Notification Capability

The Low Altitude Authorization and Notification Capability (LAANC), is a collaboration between FAA and Industry. It directly supports UAS integration into the airspace. (AIRMAR, 2018)

State UAS Laws

State law-making is continually creating new UAS regulations. There are multiple websites tracking state laws including:

- 2017 Unmanned Aircraft Systems (UAS) State Legislation Update** <http://www.ncsl.org/research/transportation/2017-unmanned-aircraft-systems-uas-state-legislation-update.aspx>
- AUVSI State Legislative Map** <https://cqrcengage.com/auvsi/statelegmap>
- U.S. Drone Laws (2018) - Drone Laws by State** <https://jrupprechtlaw.com/oregon-drone-laws>

Law Enforcement

“Standard Operating Policy (SOP) Guidance for Law Enforcement Use of Small Unmanned Aircraft Systems (sUAS)” is a new template SOP available from the Justice Technology Information Center (JUSTNET).

This SOP policy guidance is suggested for law enforcement agencies to use as a general template for developing and enhancing their internal sUAS programs. It should not be construed as the concise final program guidance for any agency, only an example agencies can base their own unique sUAS program on.

The Public Safety Aviation Accreditation Commission (PSAAC) and the Airborne Law Enforcement Association (ALEA) released the final version of standards for sUAS use by public safety agencies. The new sUAS standard has five sections: administration, flight operations, safety, training and maintenance, and discusses tactical, legal and ethical uses of sUAS. (U.S. Fire Administration, 2017)

Tribal Airspace Regulation

“On May 9, [2018] the Secretary of Transportation announced the selection of 10 state, local, and tribal governments as participants in the **UAS Integration Pilot Program** (IPP). These entities will partner with private sector participants to safely explore the further integration of drone



Regional UAS Policy Overviews

operations.” (FAA, July 20, 2018) Although the FAA claims exclusive airspace authority, there is discussion as to the sovereign authority to regulate tribal airspace. (Haney, 2016)

Tribal Government Parity

“The Drone Federalism Act of 2017 provides parity for tribal governments with state and local governments to regulate the use of UAS by hobbyists and civil operators in instances where UAS flights may pose safety and public nuisance issues. For example, if a tribe holds a traditional ceremony, an annual community gathering, a sports contest or an outdoor concert at a tribal casino, the tribal government could issue its own UAS operation regulations under 200 feet to ensure public safety and privacy.” [Drone Federalism Act of 2017]

International UAS Laws

The International Civil Aviation Organization (ICAO) maintains an online database of national UAS laws:

 **Current State [International] Regulations** <https://www.icao.int/safety/UA/UASToolkit/Pages/State-Regulations.aspx>

Other resources for international drone laws:

-  **Drone Mate** [Mobile App]
-  **Global Drone Regulation Database**
-  **UAV Coach Master List of Drone Laws**
-  **UAV Systems International Drone Laws by Country**

Note: All references, resources and laws are constantly changing, and the reader is advised to check current national, state and local regulations prior to UAS operations.





State Legislation

The main source of this review came from the National Conference of State Legislation – 2017 review: (<http://www.ncsl.org/research/transportation/2017-unmanned-aircraft-systems-uas-state-legislation-update.aspx>). Information derived from this source is indicated by an *** in the State column.

State	Date	Link	Comments
General	Jun 2016	http://www.ncsl.org/research/transportation/taking-off-state-unmanned-aircraft-systems-policies.aspx	A general site to legislative efforts
General ***	Jan 2018	http://www.ncsl.org/research/transportation/2017-unmanned-aircraft-systems-uas-state-legislation-update.aspx	Same as above; newer version (2018); may be a great source of information; Listings for Montana,
Washing- ton		http://www.wsdot.wa.gov/NR/rdonlyres/AC738BE5-FDCE-4FD9-A173-6C913FDABE24/o/	Policy Guideline for UA Systems- a good start to see where the sUAV policies are heading
Oregon	Feb 2017	https://jrupprechtlaw.com/oregon-drone-laws	Brief published by Legislature
Oregon			Oregon Aviation Regulations Chapter 738
Oregon ***		HB 3047 prohibits the use of UAS over private property in a manner that intentionally, knowingly or recklessly harasses	
Oregon ***		HB 3047 specifies that UAS may be used by law enforcement to reconstruct an accident scene.	
Oregon ***		HB 4066 - Modifies provisions relating to unmanned aircraft systems, commonly known as drones.	
Idaho	Apr 2013	https://www.aclu.org/blog/national-security/first-state-laws-drones	Media report by ACLU
Idaho		https://www.idaho.gov/driving/aircraft-drones/	Links to FAA Rules Links to FAA regulations for registering drones
Idaho	Apr 2013	https://www.aclu.org/blog/national-security/first-state-laws-drones	Media report by ACLU
Idaho		TITLE 21 AERONAUTICS CHAPTER 2 STATE LAW FOR AERONAUTICS	Terms defined
Idaho		State Sovereignty; the space above the lands and waters of the State, unless granted to the US Government.	



State Legislation

The main source of this review came from the National Conference of State Legislation – 2017 review: (<http://www.ncsl.org/research/transportation/2017-unmanned-aircraft-systems-uas-state-legislation-update.aspx>). Information derived from this source is indicated by an *** in the State column.

State	Date	Link	Comments
Idaho		<p>Ownership of Space above the lands and waters of the State – vested to the several owners of the surface beneath.</p> <p>LAWFULNESS OF FLIGHT: lawful over lands and waters of the state except:</p> <ul style="list-style-type: none"> • At low altitudes which interfere with the existing use of the land or water or • Unless flights are imminently dangerous to persons or property lawfully on the land beneath; • Landing on the land or water without owner’s consent (unless it is a forced landing) • Owner of the aircraft is liable for injuries or damages to people or property on the land or water beneath <p>Emergency Response – for safety, search and rescue or for controlled substance investigations --- Search warrants are required; property owner’s consent is required</p>	
	2013 - 2015	https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?	AB 1327 Bill Information
	2013	https://legislature.idaho.gov/wp-content/uploads/sessioninfo/2013/	SB 1134 Privacy and Law Enforcement
	2016	https://legislature.idaho.gov/wp-content/uploads/sessioninfo/2016/	SB 1213 Hunting Restrictions
California	Sep 2017	https://www.hoverlaw.com/category/state/	Status Update Reports; good information re: background and status
California ***	Sep 2016		SB 807 and AB 1680 – passed; related to immunity of emergency responders to knock down a drone if it’s in their way, and makes it illegal to stop at an emergency scene and interfere with first / emergency responders



State Legislation

The main source of this review came from the National Conference of State Legislation – 2017 review: (<http://www.ncsl.org/research/transportation/2017-unmanned-aircraft-systems-uas-state-legislation-update.aspx>). Information derived from this source is indicated by an *** in the State column.

State	Date	Link	Comments
California ***		SB 975 prohibits municipalities from regulating UAS. It allows a municipality that is also a water company to enact ordi-	
California			Restricts use over public water supplies
California			Good example of law prohibiting municipal UAS regulation
California			Page 19 – Table of Legislation in other states from 2013 - 2014
Colorado ***	May 2017	HB 1070 creates a pilot program requiring the deployment of at least one team of UAS operators to a region of the state	
Connecticut	Jun 2017	https://www.cga.ct.gov/pri/docs/2014/Drone%20Use%20Regulation%20Final%20Report%20for%20printing.pdf	FAA part 107 license required
Connecticut	Jun 2017	https://www.cga.ct.gov/pri/docs/2014/Drone%20Use%20Regulation%20Final%20Report%20for%20printing.pdf	FAA part 107 license required
Florida ***		HB 1027 generally pre-empts local regulation of UAS but specifies that localities may enact ordinances relating to nui-	
Georgia	July 2017	https://jrupprechtlaw.com/georgia-drone-laws	Committee created to look into drone usage
Georgia			Committee report did not lead to legislation
Georgia			Governor’s Commission established 11/16
Georgia ***		HB 481 defines unmanned aircraft systems and pre-empts localities from adopting UAS regulations after April 1,	



State Legislation

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State	Date	Link	Comments
Indiana ***		SB 299 makes it a class A misdemeanor to commit “remote aerial voyeurism.” This offense becomes a level 6 felony if	
Louisiana ***		SB 69 pre-empt local regulation of UAS.	
Minnesota	Mar 2018	http://www.dot.state.mn.us/policy/operations/opoo6.html	Good summary
Montana ***		HB 644 pre-empts local regulation specifically regarding the use of UAS in relation to a wildfire.	
Nevada ***		Already had a law regulating the use of UAS near critical facilities. This year, the state’s AB 11 added transmission	
New Jersey ***		SB 3370 pre-empts localities from regulating UAS in any way that is inconsistent with the newly enacted legislation	
New Jersey		SB 3370 applies the operation of UAS to limitations within restraining orders and specifies that convictions under the law	
N. Carolina ***	Jun 2017	HB 337 allows the use of UAS for emergency management activities, including incident command, area reconnaissance,	
South Dakota ***		SB 80 modifies the crime of unlawful surveillance to include intentional use of a drone to observe, photograph or record	
Texas ***	May 2017	SB 840 permits telecommunications providers to use UAS to capture images and allows a UAS to be used to capture imag-	
Texas	Dec 2016	http://overaustin.com/dronerules/ https://www.versustexas.com/criminal/drone-laws-in-texas/Is-it-Legal-to-Operate-a-Drone-in-Texas?	Media update on UAV near Austin Texas / City Parks/ Texas Memorial Stadium / State Capital; Trinity University; Central Texas Drone Users
Texas ***	Dec 2016	SB 840 specifies that only law enforcement may use UAS to captures images of real property that is within 25 miles of	



State Legislation

The main source of this review came from the National Conference of State Legislation – 2017 review: (<http://www.ncsl.org/research/transportation/2017-unmanned-aircraft-systems-uas-state-legislation-update.aspx>). Information derived from this source is indicated by an *** in the State column.

State	Date	Link	Comments
Texas		HB 912 – no details found	
Texas		HB 2167 – no details found	
Texas		HB 1481 – no details found	
Texas		HB 3528 – no details found	
Texas ***		Texas Privacy Act – Texas Government Code Section 423.002(a)	Re: recordings on privately owned property
Texas ***		Government Code 423.003	Impermissible surveillance / Could face a Class C Misdemeanor
Texas ***		HB 1643 prohibits localities from regulating UAS except during special events and when the UAS is used by the locality.	
Utah ***		SB 111 pre-empts local regulation of UAS.	
Utah ***		SB 111 modifies the offense of criminal trespass to include drones entering and remaining unlawfully over property with	
Utah ***		SB 111 allows law enforcement to use UAS for purposes unrelated to a criminal investigation and requires law enforcement	
Virginia ***	2017	HB 2350 makes it a Class 1 misdemeanor to use UAS to trespass upon the property of another for the purpose of secretly or	
Virginia	Mar 2013	https://www.aclu.org/blog/national-security/first-state-laws-drones	Media report
Virginia			2 year Moratorium



Policy Comparisons and Findings

State	Date	Policy / Document Name	Status	Document #
Oregon	June 15, 2017	Act	Passed	HB 3047
Oregon	February 24, 2016	Bill	Ordered	HB 4066
California	January 9, 2018	CDFW - Unmanned Aircraft Systems (UAS) Operations Manual	Implemented	CDFW ITPL 18-01 UAS
Colorado	July 9, 1905	Act	Passed	HB 1070
Connecticut	2017	Act	Presented	SB 975
Florida	2017	Act	Presented	CS / HB 1027
Georgia	July 2017	Bill	Enacted	HB 481
Idaho		Title 21 Aeronautics Chapter 2 State Law for Aeronautics	Enacted	Title 21 Aeronautics Chapter 2 State Law for Aeronautics
Indiana	2017	Act	Presented	SB 299
Louisiana	2017	Bill	Presented	SB 69
Montana	65th Legislature 2017	Act	Presented	HB 644
Nevada	2017	Act	Presented	AB 11
New Jersey	January 2018	Act	Passed	SB 3370
N. Carolina	June 2017	Act	Passed	HB 337
S. Dakota	2017	Act	Presented	SB 80
Texas	September 2017	Act	Enacted	HB 1643
Texas	May 2017	Act	Passed	SB 840
Utah	Mar 2017	Bill	Enacted	SB 11
Virginia	2017	Act	Approved	HB 2350



Policy Comparisons and Findings

Topics / Issues

All **policy documents** were reviewed and dominant topics / issues were captured in a spreadsheet format.

The three (3) most commonly raised topics / issues were:

- ✂ Follows FAA Rules and Regulations for sUAS – “Small Unmanned Aerial Systems” (14 CFR Part 107)
- ✂ Security / Law Enforcement / search warrants / interference/ critical infrastructure / weaponization / public hearings
- ✂ Public Privacy / Rights / Reasonable Expectations

The following topics / issues were also raised, but to a significantly lesser extent:

- ✂ Protection of biological resources / wildlife
- ✂ Operating Procedures: including private land ownership and data retention
- ✂ Insurance requirements
- ✂ Use by Convicted persons
- ✂ Safety - crew and public; medical contact info (911)
- ✂ Operational Control - PIC or UAS Coordinator etc. & Chain of Command
- ✂ Defined Crew
- ✂ Crew certification & training required / data retention
- ✂ Medical Exam – vision
- ✂ Definite Project or Use
- ✂ Equipment Inspection and Maintenance
- ✂ Return to Home (RTH) Capability
- ✂ Project definition steps and forms
- ✂ Other Agency / contractor use
- ✂ Protection of Emergency Responders
- ✂ Personal Delivery Services
- ✂ Furtherance of Higher Education

Discussion

After reviewing the policies and related documents, it appears that there are significant differences between the:

1. way that each agency and State approaches the topic of sUAS, and
2. status of enacted legislation.

The existing **Washington State Policy Guidelines** are already consistent with the three top “topics / issues”, i.e.,

- ✂ Follows FAA Rules and Regulations for sUAS – “Small Unmanned Aerial Systems” (14 CFR FAA Part 107)
- ✂ Security / Law Enforcement / search warrants / interference/ critical infrastructure / weaponization / public hearings
- ✂ Public Privacy / Rights / Reasonable Expectations

The State of California’s – Natural Resource Agency Department of Fish and Wildlife - **Unmanned Aircraft System (UAS) - Operations Manual** provides a possible template for an “operations manual.”





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Model UAV Policy

Numerous organizations have developed operational manuals, safety guidelines, and other policy documents. Examples include the Interagency Fire Unmanned Aircraft Operations Guide ([National Wildlife Coordinating Group, 2017, July](#)), Oregon Department of Transportation Unmanned Aircraft Systems (UAS) Operations Manual ([State of Oregon, 2017 July](#)), Texas Department of Transportation Unmanned Aircraft System (UAS) Flight Operations and Users Manual ([Texas Department of Transportation, 2018, April](#)), The University of California UAS Operations Manual ([The University of California, 2015, November](#)), and many others. The Oregon Department of Administrative Services has also published “A Guide to Controlling Risk” specific to UAS ([State of Oregon Department of Administrative Services](#)).

The following example drone policy comes from John A. Gordnier, a former California assistant attorney general. The “Recommended Model Policy for the Use of UAV” is provided on the Emergency Management website. ([Holdeman, 2015, March 9](#))

Section 1: Definitions

- A. Model Aircraft – Any radio or otherwise remotely controlled aircraft, rocket, or other aerial vehicle used only for sport or recreational uses.
- B. Public Safety Agency – Any local, state, or regional agency or entity that has a duty to enforce the law, respond to or plan for response to emergency situations.
- C. Public Safety Purpose – Any flight that:
 - 1. has been approved by a court of competent jurisdiction;
 - 2. is for a legitimate public safety or routine law enforcement purpose;
 - 3. is necessary to assist in locating a fugitive, the victim of an abduction or kidnapping, providing for officer or public safety or assisting in managing or preparing to manage the response to an emergency caused by any natural or manmade disaster or threat of harm to the public;
 - 4. has been approved by the UAV supervisor for training, demonstration or UAV maintenance or testing purposes.
- D. Routine Law Enforcement Purpose – Any law enforcement activity that does not require judicial approval under the statutory or decisional law of the jurisdiction.
- E. Unmanned Aerial Vehicle [UAV] – Any powered aerial vehicle which:
 - 1. does not carry a human operator;
 - 2. uses aerodynamic forces to provide vehicle lift;
 - 3. can be programed to fly autonomously or can be piloted remotely;
 - 4. may be expendable or recoverable; and
 - 5. can serve as a platform for devices or systems which are capable of:
 - a. photographing persons, objects or mapping surface or geological formations and storing or transmitting the captured images;
 - b. tracking or detecting persons or objects using infra-red, thermal or any similar technology and storing or transmitting the captured information;
 - c. engaging in the real time video recording of the movements of persons or objects and storing or transmitting the captured information; and
 - d. detecting and capturing aural, digital or other forms of communication and storing or transmitting the captured communications.
- F. Unmanned Aerial Vehicle System [UAVs] – The personnel who:
 - 1. operate the UAV itself;
 - 2. maintain the UAV and any systems with which it is equipped;
 - 3. monitor, capture, display, download, store or otherwise manipulate the data collected and or transmitted by the UAV while it is in operation;
 - 4. supervise the personnel involved in the operation of the UAV; and
 - 5. who approve or seek approval of a UAV operation.



Model UAV Policy

Section 2: UAV Minimum Specifications

- A. Any UAV acquired by a public safety agency shall be equipped with a device or devices which are capable of capturing individual flight times and individual flight paths information.
- B. Any UAV acquired by a public safety agency shall not be capable of being armed.
- C. Any UAV acquired by a public safety agency shall be equipped with the technology necessary to prevent the UAV from being “hijacked” by a competing control signal.
- D. Any UAV acquired by a public safety agency shall comply with any other mandatory specifications required by the Federal Aviation Administration (FAA).

Section 3: Certification and Training

- A. No public safety agency shall acquire or operate a UAV without having first obtained the necessary Certificate(s) of Authorization or waivers from the FAA.
- B. UAVS shall be operated only by personnel who have received appropriate training regarding the UAV being utilized, training in the policies and procedures of the agency and general training in the controlling legal principles dealing with search, seizure and privacy.

Section 4: Operating Policy and Procedures

- A. The Chief of Police, Sheriff or other public safety agency chief executive shall designate an individual or individuals who shall serve as the UAV supervisor(s).
- B. No UAV flight shall occur without the prior approval of the UAV supervisor or, if the UAV supervisor is unavailable, the Chief of Police, Sheriff or other public safety agency chief executive.
- C. Except in emergency situations requests for a UAV flight will be in writing stating

the public safety purpose furthered by the requested flight. In an emergency situation the written request may be filed within a reasonable time, not to exceed seventy-two hours, after the emergency situation has been resolved.

- D. Unless a UAV request has been designated as a record exempt from public disclosure under the law of the jurisdiction in which the flight occurs the request shall be a public record. Such records shall be retained for at least one year before being purged. If such records, however designated, are related to a criminal investigation they shall be retained until that investigation is completed or until any charges filed are finally resolved.
- E. The data recorded by the UAV showing the time and path of the flight shall be downloaded, assigned a discrete file number and retained for at least one year before being purged. This data shall be a public record unless it has been designated as a record exempt from public disclosure under the law of the jurisdiction in which the flight occurs. If such records, however designated, are related to a criminal investigation they shall be retained until that investigation is completed or until any charges filed are finally resolved.
- F. Data from each flight shall be recorded on a form which captures:
 - 1. the name of the requesting party or a copy of the court order authorizing the flight;
 - 2. the specific public safety purpose stated in support of the flight;
 - 3. the name of the UAV supervisor who approved the flight;
 - 4. the number of the file containing the downloaded information related to flight time and flight path; and
 - 5. the names of the persons who composed the UAVS involved in the specific flight.
 - 6. This data shall be retained shall be retained for at least one year before being purged. If such records, however designated, are related to a criminal investigation they shall be retained until that investigation is completed or until any charges fled are finally resolved.



Model UAV Policy

- G. Any flight described in sections 1.C.2, 1.C.3 and 1.D of this model policy shall not require judicial approval. All other flights undertaken by a law enforcement agency as part of a criminal investigation shall be undertaken only with judicial approval based on a showing of probable cause.

Section 5: Data Retention

- A. Any data collected by a UAV in the course of a flight which is not relevant to a criminal investigation, is not relevant to a emergency management or mapping purpose described in Section 1.C.3 or Section 1.D.5 shall be destroyed within seventy-two hours of the termination of the flight on which they were collected.
- B. Unless otherwise exempted from public disclosure by the terms of this policy, all data collected by a UAV and retained by a public safety agency for a legitimate public safety purpose shall be open for public inspection.

Section 6: Annual Reports

- A. Each public safety agency utilizing UAVs shall publish an annual report which discloses:
 - 1. the number of flights;
 - 2. the total time the UAV was used for all flights;
 - 3. the total cost of the UAV flights including the cost of personnel involved as the UAVS as well as the cost of maintaining the UAV; and
 - 4. the number of flights which resulted in the collection of data which was retained and the use which was made of that data.





Model Operations Manual

The State of California, The Natural Resources Agency, Department of Fish and Wildlife adopted the *Unmanned Aircraft Systems (UAS) Operations Manual* on January 9, 2018. (State of California, 2018, January 9)

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1 Introduction

The California Department of Fish and Wildlife (CDFW) is implementing the use of Unmanned Aircraft Systems (UAS) for several of its programs in support of its mission. To ensure public safety, employee safety, and regulatory compliance while carrying out UAS activities, CDFW has developed this UAS Operations Manual (manual). While this manual may not address all potential UAS activities, it is intended to be the baseline for CDFW UAS policy and it applies to all UAS activities conducted by CDFW personnel or contractors during the course of their job duties.

Wherever possible, this manual draws its terminology and best practices from the FAA, other Federal and State government entities, and other industry leaders. Additionally, CDFW participates with other Natural Resource Agency Departments in a UAS Working Group to coordinate consistent UAS policy and operations.

1.1 Use of this Manual

This manual provides details of procedures and requirements necessary to safely and efficiently conduct UAS activities. The procedures and requirements outlined in this manual are intended to comply with FAA regulations for the use of small UAS weighing less than 25 Kgs. (55 lbs.).

The procedures described in this manual apply to all CDFW UAS activities. Depending on the nature of the task, the CDFW UAS Coordinator may prescribe additional requirements as needed.

If regulations referenced in this manual change, or safer and more effective operational methods are developed, it is the responsibility of all UAS operations personnel to notify and provide input to the CDFW UAS Coordinator to effect changes to this document. This manual and the policies and procedures provided herein will be reviewed regularly and updated as needed.

UAS operations personnel shall study this manual and have a working knowledge of the

policies and procedures contained herein. A copy of this manual and all forms specified herein shall be available at every location where UAS operations are conducted.

1.2 UAS Safety

Safety is the fundamental consideration in all CDFW UAS activities. CDFW requires a culture of open reporting of all safety hazards. It is imperative that management not initiate disciplinary action or retaliate against any personnel who, in good faith, disclose hazards, safety incidents, or other concerns.

It is the duty of every crew member involved in UAS activities to contribute to the goal of continued safe operations. This contribution may come in many forms and includes always operating in the safest manner practicable and never taking unnecessary risks. Any safety hazard, whether procedural, operational, or maintenance related should be identified as soon as possible after, if not before, an incident occurs. Any suggestions in the interest of safety should be made to the Pilot in Command or the UAS Coordinator.

UAS activities are to be conducted in a manner that provides an accident-free workplace, including no harm or damage to people, biological resources, equipment, or property, and to make every effort to respect the public's privacy. CDFW encourages monitoring UAS regulations, technology, practices, and laws to ensure best safety practices are continually incorporated into the organization.

Ultimately, each UAS crew member is responsible for their own safety. Each individual is responsible for knowing their own limitations, and should inform their supervisor immediately when a task or conditions are beyond their capability or training, or if they believe a situation is unsafe.

2 Scope and Objectives

The scope of this manual includes all operations conducted by CDFW UAS personnel and is applicable to all locations where UAS activities may be conducted. This manual is also intended to achieve the following objectives:



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- ✘ Facilitate administration of UAS activities;
- ✘ Ensure the safety of CDFW UAS crew members and the public when conducting UAS activities;
- ✘ Establish minimum guidelines for qualifications, safety, training, security, and
- ✘ operational procedures when conducting UAS missions;
- ✘ Ensure that impacts to biological resources are minimized, and
- ✘ Ensure that operations of UAS do not intrude upon the rights of the public.

The following procedures apply to all CDFW personnel, including its agents, engaged in UAS activities during the course of their job duties. These procedures are intended to protect CDFW personnel and the public from hazards associated with UAS activities.

When operating a UAS, CDFW personnel will abide by FAA flight regulations and guidelines and receive the proper authorizations as outlined in this manual. CDFW UAS activities are carried out only by teams of trained employees.

3 Definitions, Roles and Responsibilities

This section defines applicable terms, prohibited activities, and outlines the roles and responsibilities of each CDFW employee directly involved in UAS activities.

3.1 Definitions

[see [General Definitions](#) and [General Acronyms](#) for full descriptions]

- ✘ AGL
- ✘ COA
- ✘ FAA
- ✘ Global Positioning System (GPS)
- ✘ Near Miss
- ✘ Pilot in Command (PIC)
- ✘ RTH
- ✘ Small Unmanned Aircraft (sUA or UA) – as defined by the FAA in AC 107-2

- ✘ Small Unmanned Aircraft System (sUAS or UAS) – All UAS referenced within this manual are assumed to be sUAS. UAS will be used colloquially throughout this manual.

- ✘ UAS
- ✘ UAS Pilot
- ✘ UAS Project
- ✘ UAS Mission
- ✘ UAV
- ✘ Visual Line of Sight (VLOS)
- ✘ Visual Observer (VO)

3.2 Roles and Responsibilities

The UAS personnel roles consist of the UAS Coordinator, Certified CDFW UAS Pilot, Pilot in Command (PIC), Visual Observer (VO), Camera Operator and support personnel. UAS related duties, to the extent applicable, should be included in the Duty Statement of all UAS personnel.

3.2.1 UAS Coordinator

The UAS Coordinator is a CDFW employee trained in all aspects of UAS regulation and operation. The UAS Coordinator's responsibilities include, but are not limited to:

- ✘ Overseeing the scheduling and planning UAS activities in a safe manner and in accordance with the UAS Operations Manual and CDFW policy;
- ✘ Reviewing and authorizing UAS Project Requests prior to any UAS activity;
- ✘ Reviewing the UAS Project Request with the assigned crew;
- ✘ Serving as the point of contact for any UAS crew member's concerns about the safety of the UAS activities;
- ✘ Providing notification to the FAA of any accidents following UAS activities in accordance with CDFW policy and FAA regulation;
- ✘ Maintaining the Department's UAS authorization from the FAA;
- ✘ Maintaining and reporting flight logs per FAA requirements, and
- ✘ Keeping this manual up-to-date with applicable regulatory changes.



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3.2.2 UAS Crew

A UAS crew will consist of, at a minimum, a Certified CDFW UAS Pilot in the role of Pilot in Command (PIC) for the mission, and a Visual Observer (VO). Additional personnel may also be present as support crew members including a camera operator. The responsibilities of each position are detailed below.

3.2.2.1 Pilot in Command (PIC)

The PIC is a Certified CDFW UAS Pilot serving as the PIC for a specific mission. The PIC is the crew leader and is directly responsible for mission safety and objectives. During the flight the PIC's primary duty is to focus on flying the aircraft safely until it is back on the ground. The PIC leads onsite Pre- and Post-flight UAS activities and is responsible for:

- ✘ Piloting UAS flights for the mission;
- ✘ Overseeing all onsite UAS activities and ensuring that all activities are being carried out in a safe manner;
- ✘ Operating the UAS in a safe and effective manner in accordance with the manufacturer's approved flight manual;
- ✘ Establishing coordination with personnel that will be onsite;
- ✘ Coordinating with biologists to establish potential risks to biological resources in the operations area;
- ✘ Terminating UAS activities at any time due to unsafe or changing conditions encountered prior to or during operations;
- ✘ Conducting and documenting briefings (i.e., tailgate safety meetings) addressing hazards specific to the UAS with site operations personnel. This includes an on-site pre-flight assessment of weather conditions, and identification and management of all persons in the area that may be affected by the UAS activities;
- ✘ Verifying that copies of the UAS Project Request, UAS Project Authorization, UAS Operations Manual, and all related FAA documents are present and available onsite;
- ✘ Performing thorough pre-flight inspections of the aircraft and transmitter, and ensuring that all equipment and settings are in order prior to initiating flight;

- ✘ Designating a location or locations where the Visual Observer (and support personnel) shall be stationed;
- ✘ Ensuring the UAS is flown within visual line of sight (VLOS) and lower than 400 feet above ground level (AGL);
- ✘ Terminating UAS activities if a manned aircraft enters the immediate area and any possibility of conflict exists;
- ✘ Logging the mission and documenting any accidents, near misses, or unanticipated hazards that occurred during flight and any lessons learned; and
- ✘ Ensuring that a copy of the Flight Log(s) is filed with the UAS Coordinator after each project.

3.2.2.2 Visual Observer

The Visual Observer (VO) is responsible for aiding the PIC with a dedicated set of eyes and ears during UAS missions. The primary communication during flight is between the PIC and the VO. The VO and is responsible for:

- ✘ Keeping their eye on the UAS and continuously scanning the airspace where the UAS is operating for any potential aircraft or collision hazards and maintaining a see-and-avoid awareness of the position of the aircraft and the surrounding airspace through direct visual observation;
- ✘ Assisting the PIC in identifying any potential hazards or changing conditions that may affect the mission or the safety of persons or property;
- ✘ Communicating to the PIC the active flight status of the UAS and any hazards which may enter the area of operation so that the pilot can take appropriate action;
- ✘ Watching and listening for any abnormal sounds or flight characteristics being exhibited by the UAS; and
- ✘ Being prepared to carry out emergency plans and procedures in the event of an emergency incident or accident.

3.2.2.3 Support Personnel

Support personnel refers to employees that are part of the UAS crew providing added support to the PIC or VO. The support personnel's duties are similar to the VO's



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responsibilities. Support personnel are responsible for:

- ✘ Following the instructions of the PIC during UAS activities;
- ✘ Helping to maintain a “Sterile Cockpit” environment for the PIC and the VO, such that they have minimal distractions, by keeping conversations out of their earshot, and ensuring any spectators do the same;
- ✘ Monitoring airspace and site conditions that could adversely affect UAS operations; and
- ✘ Being prepared to carry out emergency plans and procedures in the event of an emergency incident or accident.

One of the support personnel may be designated as a camera operator. The camera operator may use an optional additional radio control transmitter that operates only the UAs onboard camera. The camera operator coordinates closely with the PIC and is typically stationed next to the PIC along with the VO.

4 Qualifications and Training

Employees engaged in UAS activities shall possess the necessary certifications, training and experience as defined in this manual and will maintain a professional level of competency and proficiency to safely perform the assigned work.

4.1 UAS Pilot

Prospective CDFW UAS Pilots must possess both the appropriate knowledge and sufficient skills to legally and safely operate CDFW UASs. To request that personnel be trained and certified as a Department UAS Pilot, a Supervisor must fill out a DFW 1052 UAS Pilot Request form.

The requirements include:

- ✘ FAA Remote Pilot certificate
- ✘ California Driver’s License
- ✘ Training in all specific details of the UAS to be operated including normal, abnormal, and emergency procedures

- ✘ Appropriate hours of logged flight time on the UAS to be operated
- ✘ Pass a CDFW practical pilot proficiency test

The FAA Remote Pilot Certificate is required to satisfy a knowledge component. It can be obtained by either:

1. Taking and passing the Remote Pilot Knowledge Test (Unmanned Aircraft General – Small) at an FAA-certified testing center, or
2. If the staff member holds a part 61 manned pilot certificate, with a completed flight review in the preceding 24 months, successfully completing the “ALC-451: Part 107 small Unmanned Aircraft Systems (sUAS)” course and examination.

The California Driver’s License is required to ensure staff has adequate vision for UAS operations. A signed note (medical note) from a licensed medical professional indicating that the staff has sufficient corrected visual acuity to pass the vision screening required for a California Driver’s License may be substituted for a California Driver’s License. To satisfy the skills component, staff must log appropriate flight time on equipment similar to what they will be flying for the Department (similar flight configuration, similar sensor package, etc.), and pass a practical pilot proficiency test administered by staff approved by the CDFW UAS Coordinator.

Appropriate flight times and required skills will be determined and documented for each UAS operated by the Department.

Flight time can be accrued at work using CDFW equipment if an approved CDFW UAS Pilot is with the prospective pilot during the flights, and is ready to take over if needed.

CDFW may provide a basic UAS training course to allow for the accrual of this flight time. Flight time may also be accrued with just a VO at a location that has been designated by the UAS Coordinator as a Training Location.



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Flight time may also be accrued outside of work with non-CDFW equipment so long as the equipment and flight times can be appropriately verified and the UAS Coordinator has approved the equipment.

As a guideline, no more than a third of the required flight time should be accrued with autonomous flights.

After obtaining the FAA Remote Pilot Certification, staff will be considered a Provisional UAS Pilot and can legally fly according to the FAA Regulations. This allows the Provisional UAS Pilot the legal means to fly at work under the supervision of a Certified CDFW UAS Pilot while gaining the required flight hours and experience prior to becoming a Certified CDFW UAS Pilot.

Once documentation of all requirements is provided to the UAS Coordinator, a CDFW UAS Pilot Certificate will be issued, authorizing the new UAS Pilot to operate UAS for the Department.

4.2 Visual Observer

The qualifications required to be a CDFW UAS Visual Observers (VOs) include:

- ✘ • California Driver’s License or signed note from a licensed medical professional indicating that the staff has sufficient corrected visual acuity to pass the vision screening required for a California Driver’s License.
- ✘ Pass the online FAA ALC-451 course, “Part 107 small Unmanned Aircraft Systems (sUAS)”.

4.3 Training and Records

The key to continued safe operations is to maintain a professional level of competency. The UAS Coordinator will maintain a file for each UAS Pilot and VO that contains documentation of pertinent documents, training and experience.

It is the CDFW UAS Pilot’s responsibility to verify their training file contains at a minimum:

- ✘ A copy of their FAA Remote Pilot Certificate;
- ✘ A copy of their California Driver’s License or medical note;

- ✘ CDFW flight proficiency testing documentation;
- ✘ CDFW UAS Pilot Certificate;
- ✘ Accurate and up-to-date flight log, including any incidents;
- ✘ Records of any extended training.

4.3.1 Recurrent Training

CDFW UAS Pilots are required to keep their knowledge and skills up to date to maintain operational eligibility.

The FAA Remote Pilot Certificate is valid for 24 months, and pilots must recertify every 24 months.

All UAS Pilot flight time must be logged with the UAS Coordinator. Minimum flight time of 3 flights per 90 days must be logged to stay current.

The CDFW flight proficiency test must be passed every 24 months.

4.3.2 Degree of Suitability

Employees must demonstrate to the UAS Coordinator’s satisfaction a continued high degree of suitability for participation in UAS activities. Demonstration includes, but is not limited to, the following factors:

- ✘ Comfort and competency while in flight;
- ✘ Contributions to the objectives of the UAS mission;
- ✘ Compliance with the standards of the UAS Operations Manual;
- ✘ Willingness to work in a team-oriented environment; and
- ✘ Acting in a safe manner at all times.

4.3.3 Good Judgment

CDFW UAS Pilots are prohibited from operating an aircraft in a careless or reckless manner that could endanger the life or property of another. UAS Pilots are expected to exercise good judgment and conduct themselves in an ethical, responsible, lawful, and safe manner with respect to other UAS crew members, personnel onsite, and the general public.



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4.4 Suspension

Any previously certified Department UAS Pilot who does not meet the ongoing eligibility requirements described above shall be suspended from CDFW UAS activities. UAS Pilots may be reinstated by the UAS Coordinator provided that they demonstrate acceptable compliance with the aforementioned requirements.

5 Operational Procedures

5.1 Requesting a UAS Project

Prior to any UAS project, the project proponent will submit a DFW 1049 UAS Project Request form to the UAS Coordinator. The general elements of the UAS Project Request are:

- ✘ Site location name, County, and CDFW Region;
- ✘ Site map with target areas outlines, potential access and launch sites identified, and land ownership identified;
- ✘ CDFW Land Manager permission, if project is on CDFW land.
- ✘ Site physical description, with potential hazards identified;
- ✘ Purpose and objective of the UAS project;
- ✘ Assessment of potential risks to biological resources by a local CDFW biologist;
- ✘ Name, location, and Emergency phone number of nearest Hospital.

5.2 Review and Authorization of a UAS Project

The UAS Coordinator or a UAS Pilot will assess the viability of the proposed project by completing the DFW 1050 UAS Project Authorization form. This assessment identifies any potential hazards associated with the UAS activity, and describes measures to eliminate, guard against, or avoid those hazards.

The UAS Project will not move forward until the DFW 1050 UAS Project Authorization has been signed by the UAS Coordinator.

At a minimum, the assessment shall include a description of the following items and

potential hazards and corresponding safety measures associated with each of the items:

- Airspace check. Verify via the CDFW UAS Restricted Areas map or other appropriate sources that the project is in authorized airspace;
- ✘ Property ownership assessment and verification of owner permission, if required;
- ✘ Site access and launch location(s) for optimum visual line of sight during operations;
- ✘ Overhead obstructions, including power lines, trees, buildings, communications towers;
- ✘ Risks to biological resources and whether a biologist will be required to be onsite during operations;
- ✘ Privacy rights issues, identify flight boundaries;
- ✘ Add additional comments pertaining to any hazards or safety measures associated with the UAS activity.

Crew members involved in UAS activities are encouraged to visit the site location if possible prior to conducting the mission to assist in preparing the UAS Project Authorization.

A copy of both the UAS Project Request and the approved UAS Project Authorization will be kept on hand during any UAS projects.

5.3 Pre-UAS Project Procedures

At a minimum, the following procedures will be used in pre-UAS project planning preparation. The UAS Coordinator may require additional site-specific requirements.

5.3.1 UAS Crew Assignment

The UAS Coordinator will assign a UAS Crew for the project. This will include at a minimum a PIC and a VO. Additional crew will be assigned as needed.

5.3.2 UAS Operations at a CDFW Property or Facility

For UAS operations within a CDFW land or facility boundary, the UAS Project proponent shall contact, and obtain permission from, the appropriate CDFW Land or Facility Manager



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prior to submitting the UAS Project Request. Any restrictions or limitations required by Title XIV of the California Code of Regulations or the Land Manager must be documented and noted on the UAS Project Request form. The UAS Coordinator will confirm this permission with the Land or Facility Manager. No UAS Project shall be conducted at a CDFW Land or Facility without the expressed permission of the Land or Facility Manager.

5.3.3 UAS Operations at Non-CDFW Properties

For UAS activities planned on lands not owned/managed by CDFW, appropriate permission is required and must be obtained by the UAS Project proponent and noted on the UAS Project Request form. For State, Federal, or local government lands, check with the appropriate authority to determine if permission or notification is required. If possible, engage with the law enforcement authority responsible for the area of interest. For private lands, written permission must be obtained from the land owner. If possible, the land owner, or their representative, should be on-site during the project.

5.3.4 UAS Pre-Flight Checklist

Prior to heading out for a UAS Project, the crew will check off the items on the DFW 1051 UAS Flight Checklist and Log form to be completed in-office. This includes:

- ✂ Check airspace;
- ✂ Check for Notices to Airmen (NOTAMs) and Temporary Flight Restrictions;
- ✂ Charge batteries and other equipment;
- ✂ Check weather forecast;
- ✂ Ensure required documents are in hand for flight.

All items shall be checked off prior to conducting any flight activities.

5.4 On-site UAS Flight Procedures

5.4.1 Safety Briefing

Prior to UAS operations, the PIC will conduct an on-site briefing for all personnel (UAS crew, biologist, property owner, and any other staff or observers). It will include a review of the UAS Project Request and Authorization, tasks to be undertaken, sterile cockpit

procedures, safety procedures, any unusual hazards or environmental conditions, and modifications of standard procedures, if necessary.

5.4.2 UAS Flight Checklist

Prior to every flight, the crew will check off every item on the DFW 1051 UAS Flight Checklist and Log form not already completed in-office. This includes:

- ✂ Conduct safety checks, including the precautions listed in section 5.7.1 below.
- ✂ Re-Check for Notices to Airmen (NOTAMs) and Temporary Flight Restrictions;
- ✂ Ensuring required documents are in hand for flight;
- ✂ Recording current weather conditions;
- ✂ Checking airspace for aircraft and other hazards immediately prior to flight;
- ✂ Equipment prep and inspection;
- ✂ Pre-flight power-ups and settings check;
- ✂ Ensuring the launch area is clear of people and other hazards;
- ✂ Low altitude flight test.

All items shall be checked off prior to conducting any flight activities.

5.4.3 Flight Procedures

During UAS Flights, all FAA regulations will be followed. Additionally, the following rules will apply:

- ✂ A PIC and a VO must be present for all flights;
- ✂ The PIC or the VO must maintain visual contact with the UAV at all times;
- ✂ A sterile cockpit environment must be maintained at all times;
- ✂ If a manned aircraft enters the proximity of the UAS mission, the UAV will be landed until the manned aircraft is outside of the area.
- ✂ In the event of any unplanned in-flight situation, contingency plans will be followed immediately;
- ✂ On landing, power-down and checklist procedures will be followed immediately.

5.5 Post-UAS Flight Procedures

Upon finishing a UAS project, the PIC will be responsible for submitting a completed CDFW



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UAS Flight Checklist and Log summarizing the flight activities with the UAS Coordinator. The PIC will download and file the data from the project to a shared file location specified by the UAS Coordinator.

5.6 Privacy

The use of the UAS potentially involves privacy considerations. Absent a warrant or exigent circumstances, UAS projects 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 (e.g., residence, yard, enclosure). 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. Additionally, unintended imaging overlap into private lands should be trimmed from final image products prior to public release or use in reports.

5.7 General UAS Safety Procedures

The procedures described in this section apply to all CDFW UAS activities. Depending on the nature of the task, the UAS Coordinator may prescribe additional requirements as needed. CDFW UAS crew members who fail to follow these safety procedures will be subject to disciplinary action and may have their UAS privileges revoked. Safety rules do not exist as a substitute for common sense, sound judgment, and a continuing concern and vigilance for maximum safety.

The UAS Coordinator will be responsible for the coordination of the regular review of this Manual.

5.7.1 Safety Precautions Applicable to All UAS Activities

It is the duty of every crew member involved in UAS activities to contribute to the goal of continued safe operations. This contribution may come in many forms and includes always operating in the safest manner practicable and never taking unnecessary risks. Any safety

hazard, whether procedural, operational, or maintenance related should be identified as soon as possible to avoid incidents. It is the responsibility of every crew member to ensure the following, unless otherwise authorized:

- ✘ UAS operations are limited to daylight hours (official sunrise to official sunset), although civil twilight (30 minutes before sunrise and 30 minutes after sunset) operations may be approved with appropriate UAS lighting;
- ✘ UAS operations shall not be conducted over any persons not directly involved in the UAS project operations;
- ✘ All aircraft must use flight controllers that incorporate stabilization and autopilot systems with GPS “Return to Home” (RTH) capabilities;
- ✘ Once UAS crew members arrive on-site for a project they should be in an alert status actively scanning the airspace and listening for aircraft and observing any other activities in the area which could affect or be affected by the UAS flight activities;
- ✘ UAS crew members should continuously monitor weather conditions, specifically wind velocity and the potential of a dust or sandstorm developing;
- ✘ An appropriate level launch area should be selected with sufficient space (preferably away from bystanders) to unpack and assemble the necessary equipment for the UAS project. Try to select an area where the UAS will not kick up a dust cloud on take-off. UAS operations tend to attract local bystanders so be prepared to implement controls for safety;
- ✘ A first-aid kit with laceration supplies, and a fire extinguisher are available on-site; and a cell phone shall be readily available on-site in the event of an emergency.

5.7.2 Minimum Manning Requirements

At a minimum all UAS operations must include both a Pilot in Command and a Visual Observer. Under no circumstances will a CDFW UAS Pilot conduct UAS activities alone.



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5.7.3 Limits and Termination of UAS Activities

UAS projects shall not be conducted under the following conditions:

- ✘ When weather conditions or visibility are deemed unsafe by the UAS Coordinator or PIC;
- ✘ When manned aircraft are observed within the immediate vicinity;
- ✘ In any situation where local conditions have changed considerably prior to, or during flight.
- ✘ If significant risks to the biological resources, equipment, staff, or observers are identified that can't mitigated for.
- ✘ The PIC has final authority regarding whether conditions are safe for flying.
- ✘ Should any UAS activity be terminated due to safety or changing conditions, the PIC will inform the UAS Coordinator of the decision.

6 Equipment, Inspections, and Maintenance

Although an airworthiness certification is not required, small UAS aircraft are exposed to high frequency vibrations and should be well-maintained to ensure they are always in a condition for safe flight. It is important to ensure the safety of the UAS crew by regular inspection and maintenance of all UAS aircraft, radio transmitters, and accessories.

Maintenance logs should be maintained for each aircraft and at a minimum, the following UAS components should be checked and replaced per manufacturer guidelines or if otherwise necessary:

- ✘ Motors;
- ✘ Propellers (check for nicks and abrasions);
- ✘ Electronic Speed Controllers;
- ✘ Electrical connections, (plugs and solder connections);
- ✘ Antennae and GPS mounts;
- ✘ Screws which secure the body of the UAS, its arms, motor mounts, landing gear, camera gimbal, etc.

The PIC is responsible for choosing the appropriate equipment.

6.1 Lithium Polymer (LiPo) Battery Management

Batteries used for UAS operations are made from Lithium Polymer (LiPo) and are especially sensitive and potentially dangerous if not maintained and stored properly. As an example, if a LiPo battery is discharged to less than 20 percent of capacity they can potentially catch fire or explode during the next charging. Special battery chargers with cell balancing capabilities must be used and the batteries must be monitored and stored safely.

All batteries should be charged, maintained, and stored in accordance with the battery manufacturer's recommendations. Charging of the batteries must be monitored closely at all times. Never leave a charging battery unattended, it could catch fire!

LiPo batteries should also be drained to approximately 60 percent of capacity if stored for more than a few days. Some batteries have auto-discharge capability, but not all. Storing LiPo batteries charged to 100 percent for long periods will cause the battery to begin to off gas and start bulging. Bulging batteries must be properly discharged and disposed of immediately at an approved disposal site.

6.2 UAS Crew Equipment Requirements

Separate from the UAS Aircraft, Radio Control Transmitter, and tablet, each crew must have the necessary equipment, provided by CDFW, to use for the UAS Project. This includes, but is not limited to, the following:

- ✘ Spare propellers, spare batteries, field battery charger;
- ✘ Launch pad (when needed);
- ✘ Handheld anemometer to measure wind velocity;
- ✘ First aid kit; and
- ✘ Fire Extinguisher

6.3 Maintenance Logging

All hardware and software updates will be logged into a central location for each UAS setup. This will include:



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- ✘ Firmware updates to UAS, Controller, and Batteries
- ✘ Tablet application updates (DJI Go, Map Pilot, etc.)
- ✘ Tablet OS updates (iOS)
- ✘ Equipment repair or replacement (rotors, batteries, etc.)

6.4 Use of Personal UAS

CDFW staff may not use their personal UAS for Department work.

7 Emergency Procedures

UAS accidents or incidents are defined as an injury or illness occurring during or as a result from a UAS activity. An incident is further defined as any adverse consequence that caused or could have caused injury to personnel and/or damage to equipment, properties, or biological resources.

Biological resource incidents are more than just collisions, and include, but are not limited to; displacement of wildlife, nest or den abandonment, aggressive behavior towards the UAS by wildlife, and out-of-ordinary vocalization or alarm calling by wildlife.

Accidents resulting from UAS activities can range from minor injuries and mishaps to life threatening injuries, or even death. All accidents and incidents, regardless of the severity or whether or not the employee is injured, must be reported to the UAS Coordinator.

All accidents requiring medical treatment or resulting in a serious injury or death must be reported immediately after taking necessary actions to preserve life or respond to injuries. In an emergency, dial 911 to reach local authorities and medical aid as soon as possible.

7.1 Incident Reports

If an incident or accident resulting from UAS activities occurs, the PIC must complete and submit a CDFW UAS Incident Report.

excess of \$500, must also be reported to the FAA within 10 days. The PIC must coordinate with the UAS Coordinator to file this report. The PIC will report all near misses involving UAS activities to the UAS Coordinator.

7.2 Reporting and Investigation Responsibilities

A key element of any successful accident prevention program is the timely reporting and investigation of all accidents and incidents. Determining the root cause of an incident and implementing corrective actions will lead to a continual improvement in UAS safety. All crew members involved in the UAS activity; PIC, VO, UAS Coordinator, and any support personnel, must freely discuss and document any incident or near miss to determine what went wrong and develop ways to prevent recurrence.

7.2.1 UAS Coordinator

The UAS Coordinator has the following responsibilities to investigate and report incidents/accidents:

- ✘ Review the incident report submitted by the PIC;
- ✘ Ensure the submission of the incident to the FAA within 10 days of any operation that results in serious injury or property damage in excess of \$500;
- ✘ Immediately investigate each employee-reported incident;
- ✘ Notify their respective Branch and Division Chief, and Health and Safety Coordinator of any work-related incident; and
- ✘ Submit to their respective health and safety official, the timely documentation of elements necessary for job-related injuries or illness requiring medical treatment or first aid provided by a medical professional.

8 UAS Activities Conducted by Non-CDFW Personnel

Any agency or contractor personnel on a CDFW UAS Project must agree to abide by the



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procedures established in this Manual. Those meeting the standards of this Manual may be allowed to conduct UAS projects with CDFW after proper certification and documentation has been approved by the UAS Coordinator.

8.1 Contracting for UAS Services

When CDFW contracts out for services that include UAS technology, specific requirements must be met and documented.

8.1.1 UAS Submittal Package

The contractor shall provide appropriate UAS equipment for the job being contracted. This includes the most suitable aerial vehicle and payload (camera/sensors) equipment for the job, ground station equipment, and data post processing capabilities.

The contractor must be certified by the FAA for UAS operations as applicable to the work being contracted. The contractor is responsible for obtaining the appropriate authorization as may be required by the FAA for any UAS projects under this contract. Proof of the certification/exemption and authorization must be provided to CDFW prior to any flights.

The contractor shall obtain general liability insurance per Department standards specifically covering the UAS operations, and shall name the Department of Fish and Wildlife and the State of California as additional insureds for any UAS use.

Proof of liability insurance must be provided to CDFW prior to any flights. Contractor must also comply with all safety procedures as set out in the FAA regulations and the Department's UAS policy.

Appendices

Appendix 1 – UAS In-Flight Contingency Procedures

The UAS In-Flight Contingency Procedures cover several potential unplanned in-flight

situations. The procedures listed below provide the basic steps for each situation. These procedures may be modified to the capabilities of a particular UAV as needed.

Loss of Visual Line of Sight: Defined as when neither the PIC nor the VO has a visual on the UA. Procedure: If the UA is visually reacquired promptly, the mission may continue. Otherwise, the mission shall be aborted, and the PIC shall attempt to assess the location of the drone. Prior to piloting the drone in any direction, the PIC will utilize the map and data readouts on the controller and the camera on the drone to determine its position. If still unclear, the PIC will direct the UA to ascend to gain more clearance from ground objects and will then try to assess the location again. If visual line of sight is not then reacquired, a Return-To-Home shall be executed. If the UA is on an autonomous mission, Return-to-Home shall be executed if the UA is not visually reacquired promptly. Once visual line of sight is reacquired, the Return-to-Home may be cancelled and the mission may be continued.

Lost Link: Defined as when the Controller and the UA are no longer connected, and the PIC no longer has control of the UA. Procedure: The UAS will be programmed to issue the Return-to-Home command to the UA in which the UA climbs/ascends to a preset altitude, returns to the Home Point, and lands.

Fly-away: Defined as a Lost Link condition where the Return-to-Home command is not being issued or not being executed by the UA. Procedure: This is an emergency situation and all attempts should be made to regain control of the UA by moving closer to the UA. If this situation occurs while operating in controlled airspace, or if there's a chance of the UA entering controlled airspace, the PIC must notify the ATC as soon as possible.

Evasive maneuvers: Defined as unplanned manual maneuvering of the UAV to avoid wildlife interaction. Procedure: To avoid an aggressive bird, the first option is to ascend rapidly. Birds cannot ascend as fast as a drone. If the drone is already at max altitude, move laterally away from the bird. Once clear of the bird, move laterally until enough



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distance has been created to safely descend and land the drone. Do not resume operations until the bird has left the area.

Appendix 2 – UAS Incident Procedures

Near Miss incidents

A near miss is an event in which personal injury or damage to equipment, property, or the environment nearly occurred, but was averted. If a near miss incident occurs submit a completed copy of the CDFW UAS Incident Report with a description of the incident to the CDFW UAS Coordinator within 48 hours of the incident.

By definition, in a near miss the list of persons injured and environmental, property, and equipment damaged should be entered as “None” or equivalent. The description should include distance details of the near miss and what actions were taken to avoid injury or damages.

UAS Crashes

A crash includes any incident that results in damage to the UAS, persons, property, equipment, or the environment resulting from a collision with people, wildlife, trees, structures, wires, terrain, other obstructions, or mechanical failures.

Following a crash, CDFW staff should immediately take appropriate actions to protect people, and property from further damage and administer appropriate first aid or seek medical assistance for injured persons.

If the UAS contains LiPo batteries, they may be crushed or punctured in a crash. Acting to mitigate fire risk is a critical secondary consideration to treating injured persons.

If a crash occurs, the PIC must submit a completed CDFW UAS Incident Report to the CDFW UAS Coordinator within 48 hours of the incident. The incident report must include a clear description of the incident, any injuries to persons, and all damage to equipment, property, or the environment including estimates of costs to repair or replace any property or equipment.

Should damage or injury occur to non-CDFW persons or property, provide contact information for the PIC and the CDFW UAS coordinator to any involved parties and collect contact information from them for inclusion in the incident report and follow-up.

CDFW staff should recover the UA involved in a crash if the recovery can be accomplished without placing staff or other equipment at risk of injury or damage. During recovery a fire extinguisher should be carried by the recovering staff. And photo documentation of the crash site should be made for inclusion with the incident report.

Appendix 3 – UAS Operational Forms

- DFW1049 UAS Project Request
- DFW1050 UAS Project Authorization
- DFW1051 UAS Checklist and Log
- DFW1052 UAS Pilot Request
- DFW1053 UAS Incident Report
- DFW1054 UAS Pilot Certification
- DFW1055 UAS Project Value Summary

These forms may be modified over time to ensure safe, legal, efficient, and effective UAS operations.

(State of California, 2018, January 9)





Model Safety Code

The Portland Community College (PCC) UAS Safety Code provides a model for an agency/institutional safety policy. (Gabris, R. et al, 2017)

General

All small unmanned aircraft systems (sUAS) flights must be conducted in accordance with Federal Aviation Administration (FAA) 14 CFR Part 107, this safety code, and any additional rules specific to the flying site.

1. Unmanned aircraft (UA) will not be flown:
 - (a) In a careless or reckless manner.
 - (b) At a location where unmanned aircraft (UA) activities are prohibited.
2. Unmanned aircraft (UA) pilots will:
 - (a) Yield the right of way to all human-carrying aircraft.
 - (b) See and avoid all aircraft, and have a visual observer (VO, "spotter") for all flights.
 - (c) Not fly higher than four hundred feet (400 ft) above ground level (AGL)
 - (d) Not fly within five miles (5 mi) of an airport without permission of the airport control tower per Part 107.
 - (e) Only fly unmanned aircraft (UA) approved by the PCC Pilot-in-Command (PIC).
 - (f) Not exceed a takeoff weight, including payload, of fifty-five pounds (55 lbs).
 - (g) Ensure the aircraft is registered per FAA requirements.
 - (h) Not operate unmanned aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot's ability to safely control the unmanned aircraft consistent with Part 107.
 - (i) Not operate unmanned aircraft carrying pyrotechnic devices that explode or burn, or any device which propels a projectile or drops any object that creates a hazard to persons or property.
3. Unmanned aircraft will not be flown in Portland Community College (PCC) sanctioned activities or events unless:
 - (a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.
 - (b) Flown by a PCC remote pilot-in-command (PIC) or an un-certificated person manipulating the controls (PMC) supervised by a PCC remote pilot-in-command (PIC).
4. All pilots shall avoid flying directly over unprotected people and sensitive structures, and shall avoid endangerment of life and property of others.
5. A pre-flight check in accordance with manufacturer's recommendations will be completed before each flight.
6. At all flying sites, safety lines must be established in front of which all flying takes place
 - (a) Only personnel associated with PCC sUAS operations are allowed at or in front of the safety line.
 - (b) At air shows or demonstrations, a straight safety line must be established.
 - (c) An area away from the safety line must be maintained for spectators.
 - (d) Intentional flying behind the safety line is prohibited.
7. Excluding takeoff and landing, no unmanned aircraft (UA) may be flown outdoors closer than twenty-five feet (25 ft) to any individual, except for the remote pilot-in-command (PIC), person manipulating the controls (PMC), visual observers (VOs) and personnel associated with the sUAS operations.
8. The person manipulating the controls of an unmanned aircraft shall:
 - (a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.
 - (b) Comply with the directions given by the PCC pilot-in-command
 - (c) Not fly using the assistance of a camera or First-Person View (FPV) without an FAA waiver.
9. FAA Waivers may only be applied for by the appropriate PCC faculty department chair.
10. Interpretations and deviations must be approved by the appropriate PCC faculty department chair.

Updated June 3, 2017



Idaho Law for Aeronautics

Restrictions on the Use of UAS

Idaho Statutes, Title 21 Aeronautics, Chapter 2, State Law for Aeronautics, 21-213.
Restrictions on Use of Unmanned Aircraft Systems —Definition—Violation—Cause of Action and Damages

- (1) (a) For the purposes of this section, the term "unmanned aircraft system" (UAS) means an unmanned aircraft vehicle, drone, remotely piloted vehicle, remotely piloted aircraft or remotely operated aircraft that is a powered aerial vehicle that does not carry a human operator, can fly autonomously or remotely and can be expendable or recoverable.
- (b) Unmanned aircraft system does not include:
 - (i) Model flying airplanes or rockets including, but not necessarily limited to, those that are radio controlled or otherwise remotely controlled and that are used purely for sport or recreational purposes; and
 - (ii) An unmanned aircraft system used in mapping or resource management.
- (2) (a) Absent a warrant, and except for emergency response for safety, search and rescue or controlled substance investigations, no person, entity or state agency shall use an unmanned aircraft system to intentionally conduct surveillance of, gather evidence or collect information about, or photographically or electronically record specifically targeted persons or specifically targeted private property including, but not limited to:
 - (i) An individual or a dwelling owned by an individual and such dwelling's curtilage, without such individual's written consent;
 - (ii) A farm, dairy, ranch or other agricultural industry without the written consent of the owner of such farm, dairy, ranch or other agricultural industry.
- (b) No person, entity or state agency shall use an unmanned aircraft system to photograph or otherwise record an individual, without such individual's written consent, for the

- purpose of publishing or otherwise publicly disseminating such photograph or recording.
- (3) Any person who is the subject of prohibited conduct under subsection (2) of this section shall:
 - (a) Have a civil cause of action against the person, entity or state agency for such prohibited conduct; and
 - (b) Be entitled to recover from any such person, entity or state agency damages in the amount of the greater of one thousand dollars (\$1,000) or actual and general damages, plus reasonable attorney's fees and other litigation costs reasonably incurred.
- (4) An owner of facilities located on lands owned by another under a valid easement, permit, license or other right of occupancy is not prohibited in this section from using an unmanned aircraft system to aerially inspect such facilities.

History:

[21-213, added 2013, ch. 328, sec. 1, p. 859.]

(State of Idaho, 2018, July 26)





Oregon House Bill 4066

Sponsored by Representative HUFFMAN; Representative WHISNANT (Pre-session filed.) AN ACT Relating to unmanned aircraft systems; creating new provisions; amending ORS 163.700, 164.885, 498.128, 837.300, 837.360, 837.365 and 837.380; and declaring an emergency. Be It Enacted by the People of the State of Oregon:

Definition of Unmanned Aircraft System

SECTION 1. ORS 837.300 is amended to read: 837.300. As used in ORS 837.300 to 837.390 and 837.995:

[(1)] “Unmanned aircraft system” means an unmanned flying machine, commonly known as a drone. “Unmanned aircraft system” does not include a model aircraft as defined in section 336 of the FAA Modernization and Reform Act of 2012 (P.L. 112-95) as in effect on July 29, 2013.]

(1) “Aircraft” has the meaning given that term in ORS 836.005.

(2) “Law enforcement agency” means an agency that employs [police] peace officers, as defined in [ORS 133.525] ORS 133.005, or that prosecutes offenses.

(3) “Public body” has the meaning given that term in ORS 174.109.

(4) “Unmanned aircraft system” means an unmanned flying machine, commonly known as a drone, and its associated elements, including communication links and the components that control the machine.

[(4)] (5) “Warrant” means a warrant issued under ORS 133.525 to 133.703.

Weaponized Unmanned Aircraft Systems

SECTION 2. ORS 837.365 is amended to read:

837.365. [A public body may not operate an unmanned aircraft system that is capable of firing a bullet or other projectile, directing a laser or otherwise being used as a weapon.] A person commits a Class A misdemeanor if the person intentionally, knowingly or recklessly operates an unmanned aircraft system that is capable of firing a bullet or projectile or otherwise operates an unmanned aircraft system in a manner that causes the system to function as a dangerous weapon as defined in ORS 161.015.

Unmanned Aircraft Systems and Aircraft

SECTION 3. ORS 164.885 is amended to read: 164.885.

(1) A person commits the crime of endangering aircraft in the first degree if the person knowingly:

(a) Throws an object at, or drops an object upon, an aircraft;

(b) Discharges a bow and arrow, gun, airgun or firearm at or toward an aircraft;

(c) Tamper with an aircraft or a part, system, machine or substance used to operate an aircraft in such a manner as to impair the safety, efficiency or operation of an aircraft without the consent of the owner, operator or possessor of the aircraft; or

(d) Places, sets, arms or causes to be discharged a spring gun, trap, explosive device or explosive material with the intent of damaging, destroying or discouraging the operation of an aircraft.

(2)(a) Except as provided in paragraph (b) of this subsection, a person commits the crime of endangering aircraft in the second degree if the person knowingly possesses a firearm or deadly weapon in a restricted access area of a commercial service airport that has at least 2 million passenger boardings per calendar year.



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(b) Paragraph (a) of this subsection does not apply to a person authorized under federal law or an airport security program to possess a firearm or deadly weapon in a restricted access area.

(3)
(a) Endangering aircraft in the first degree is a Class C felony.

(b) Endangering aircraft in the second degree is a Class A misdemeanor.

(4) As used in this section[,]:
(a) "Aircraft" does not include an unmanned aircraft system as defined in ORS 837.300.

(b) "Restricted access area" means an area of a commercial service airport that is:
[(a)] (A) Designated as restricted in the airport security program approved by the federal Transportation Security Administration; and
[(b)] (B) Marked at points of entry with signs giving notice that access to the area is restricted.

SECTION 4. Section 5 of this 2016 Act is added to and made a part of ORS 837.300 to 837.390.

SECTION 5. Reckless interference with aircraft; penalty. A person commits a Class A violation if the person possesses or controls an unmanned aircraft system and recklessly causes the unmanned aircraft system to:

(1) Direct a laser at an aircraft while the aircraft is in the air;

(2) Crash into an aircraft while the aircraft is in the air; or

(3) Prevent the takeoff or landing of an aircraft.

Use of Unmanned Aircraft Systems by Public Bodies

SECTION 6. Section 7 of this 2016 Act is added to and made a part of ORS 837.300 to 837.390.

SECTION 7. Policies and procedures for use of data.

(1) A public body that operates an unmanned aircraft system shall establish policies and procedures for the use, storage, accessing, sharing and retention of data, including but not limited to video and audio recordings, resulting from the operation of the unmanned aircraft system.

(2) The public body shall post the following information on the public body's website or otherwise make the following information available to the public:

(a) The policies and procedures established under this section.

(b) The text of ORS 192.501.

(3) The policies and procedures established under this section must include:

(a) The length of time data will be retained by the public body.

(b) Specifications for third party storage of data, including handling, security and access to the data by the third party.

(c) A policy on disclosure of data through intergovernmental agreements.

SECTION 8. ORS 837.360 is amended to read: 837.360.

(1) A public body may not operate an unmanned aircraft system in the airspace over this state without registering the unmanned aircraft system with the Oregon Department of Aviation.

(2) The Oregon Department of Aviation may impose a civil penalty of up to \$10,000 against a public body that violates subsection (1) of this section.

(3) Evidence obtained by a public body through the use of an unmanned aircraft system in violation of subsection (1) of this section is not admissible in any judicial or administrative proceeding and may not be used to establish reasonable suspicion or probable cause to believe that an offense has been committed.



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(4) The Oregon Department of Aviation shall establish a registry of unmanned aircraft systems operated by public bodies and may charge a fee sufficient to reimburse the department for the maintenance of the registry.

(5) The Oregon Department of Aviation shall require the following information for registration of an unmanned aircraft system:

(a) The name of the public body that owns or operates the unmanned aircraft system.

(b) The name and contact information of the individuals who operate the unmanned aircraft system.

(c) Identifying information for the unmanned aircraft system as required by the department by rule.

(6) A public body that registers one or more unmanned aircraft systems under this section shall provide an annual report to the Oregon Department of Aviation that [summarizes]:

(a) Summarizes the frequency of use of the unmanned aircraft systems by the public body during the preceding calendar year; [and]

(b) Summarizes the purposes for which the unmanned aircraft systems have been used by the public body during the preceding calendar year[.]; and

(c) Indicates how the public can access the policies and procedures established under section 7 of this 2016 Act.

(7) The State Aviation Board may adopt all rules necessary for the registration of unmanned aircraft systems in Oregon that are consistent with federal laws and regulations.

SECTION 9.

(1) Section 7 of this 2016 Act and the amendments to ORS 837.360 by section 8 of this 2016 Act become operative on January 1, 2017.

(2) A public body may take any action before the operative date specified in subsection

(1) of this section that is necessary to enable the public body to exercise, on and after the operative date specified in subsection (1) of this section, all the duties, functions and powers conferred on the public body by section 7 of this 2016 Act and the amendments to ORS 837.360 by section 8 of this 2016 Act.

Use of Unmanned Aircraft System for Commercial Purposes

SECTION 10. ORS 837.380 is amended to read: 837.380. (1) Except as provided in [subsection (2)] subsections (2) and (3) of this section, a person who owns or lawfully occupies real property in this state may bring an action against any person or public body that operates an unmanned aircraft system that is flown over the property if:

(a) The operator of the unmanned aircraft system has flown the unmanned aircraft system over the property on at least one previous occasion; and

(b) The person notified the owner or operator of the unmanned aircraft system that the person did not want the unmanned aircraft system flown over the property.

(2) A person may not bring an action under this section if:

(a) The unmanned aircraft system is lawfully in the flight path for landing at an airport, airfield or runway; and

(b) The unmanned aircraft system is in the process of taking off or landing.

(3) A person may not bring an action under this section if the unmanned aircraft system is operated for commercial purposes in compliance with authorization granted by the Federal Aviation Administration. This subsection does not preclude a person from bringing another civil action, including but not limited to an action for invasion of privacy or an action for invasion of personal privacy under ORS 30.865.



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[(3)] (4) A prevailing plaintiff may recover treble damages for any injury to the person or the property by reason of a trespass by an unmanned aircraft system as described in this section, and may be awarded injunctive relief in the action.

[(4)] (5) A prevailing plaintiff may recover attorney fees under ORS 20.080 if the amount pleaded in an action under this section is \$10,000 or less.

[(5)] (6) The Attorney General, on behalf of the State of Oregon, may bring an action or claim for relief alleging nuisance or trespass arising from the operation of an unmanned aircraft system in the airspace over this state. A court shall award reasonable attorney fees to the Attorney General if the Attorney General prevails in an action under this section.

SECTION 11. ORS 163.700 is amended to read: 163.700. (1) Except as provided in ORS 163.702, a person commits the crime of invasion of personal privacy in the second degree if:

(a)(A) For the purpose of arousing or gratifying the sexual desire of the person, the person is in a location to observe another person in a state of nudity without the consent of the other person; and

(B) The other person is in a place and circumstances where the person has a reasonable expectation of personal privacy; or

(b)(A) The person knowingly makes or records a photograph, motion picture, videotape or other visual recording of another person's intimate area without the consent of the other person; and

(B) The person being recorded has a reasonable expectation of privacy concerning the intimate area.

(2) As used in this section and ORS 163.701:

(a) "Intimate area" means nudity, or undergarments that are being worn by a person and are covered by clothing.

(b) "Makes or records a photograph, motion picture, videotape or other visual recording" includes, but is not limited to[,]:

(A) Making or recording or employing, authorizing, permitting, compelling or inducing another person to make or record a photograph, motion picture, videotape or other visual recording.

(B) Making or recording a photograph, motion picture, videotape or other visual recording through the use of an unmanned aircraft system as defined in ORS 837.300, even if the unmanned aircraft system is operated for commercial purposes in compliance with authorization granted by the Federal Aviation Administration.

(c) "Nudity" means any part of the uncovered or less than opaquely covered:

(A) Genitals;

(B) Pubic area; or

(C) Female breast below a point immediately above the top of the areola.

(d) "Places and circumstances where the person has a reasonable expectation of personal privacy" includes, but is not limited to, a bathroom, dressing room, locker room that includes an enclosed area for dressing or showering, tanning booth and any area where a person undresses in an enclosed space that is not open to public view.

(e) "Public view" means that an area can be readily seen and that a person within the area can be distinguished by normal unaided vision when viewed from a public place as defined in ORS 161.015.

(f) "Reasonable expectation of privacy concerning the intimate area" means that the person intended to protect the intimate area from being seen and has not exposed the intimate area to public view.

(3) Invasion of personal privacy in the second degree is a Class A misdemeanor.

Critical Infrastructure Facilities

SECTION 12. Section 13 of this 2016 Act is added to and made a part of ORS 837.300 to 837.390.



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SECTION 13. (1) As used in this section, “critical infrastructure facility” means any of the following facilities, if completely enclosed by a fence or other physical barrier that is obviously designed to exclude intruders, or if marked with a sign conspicuously posted on the property that indicates that entry is forbidden:

- (a) A petroleum or alumina refinery;
- (b) An electrical power generating facility, substation, switching station or electrical control center;
- (c) A chemical, polymer or rubber manufacturing facility;
- (d) A water intake structure, water treatment facility, wastewater treatment plant or pump station;
- (e) A natural gas compressor station;
- (f) A liquid natural gas terminal or storage facility;
- (g) A telecommunications central switching office;
- (h) A port, railroad switching yard, trucking terminal or other freight transportation facility;
- (i) A gas processing plant, including a plant used in the processing, treatment or fractionation of natural gas;
- (j) A transmission facility used by a federally licensed radio or television station;
- (k) A steelmaking facility that uses an electric arc furnace to make steel;
- (L) A dam that is classified as a high hazard by the Water Resources Department;
- (m) Any portion of an aboveground oil, gas or chemical pipeline that is enclosed by a fence or other physical barrier that is obviously designed to exclude intruders; or

(n) A correctional facility or law enforcement facility.

(2) Except as provided in subsection (3) of this section, a person commits a Class A violation if the person intentionally or knowingly:

(a) Operates an unmanned aircraft system over a critical infrastructure facility at an altitude not higher than 400 feet above ground level; or

(b) Allows an unmanned aircraft system to make contact with a critical infrastructure facility, including any person or object on the premises of or within the facility.

(3) This section does not apply to:

(a) The federal government.

(b) A public body.

(c) A law enforcement agency.

(d) A person under contract with or otherwise acting under the direction or on behalf of the federal government, a public body or a law enforcement agency.

(e) An owner or operator of the critical infrastructure facility.

(f) A person who has the prior written consent of the owner or operator of the critical infrastructure facility.

(g) The owner or occupant of the property on which the critical infrastructure facility is located.

(h) A person who has the prior written consent of the owner or occupant of the property on which the critical infrastructure facility is located.

(i) A person operating an unmanned aircraft system for commercial purposes in compliance with authorization granted by the Federal Aviation Administration.



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Conforming Amendments [Wildlife]

SECTION 14. ORS 498.128 is amended to read: 498.128.

(1) The State Fish and Wildlife Commission shall adopt rules prohibiting the use of drones for the following purposes related to the pursuit of wildlife:

- (a) Angling;
 - (b) Hunting;
 - (c) Trapping;
 - (d) Aiding angling, hunting or trapping through the use of drones to harass, track, locate or scout wildlife; and
 - (e) Interfering in the acts of a person who is lawfully angling, hunting or trapping.
- (2) Rules adopted to carry out the prohibitions provided for in this section may include exemptions for:
- (a) Subject to ORS 837.360 [and 837.365], the State Department of Fish and Wildlife and the department’s agents and contractors for the use of drones in carrying out the duties of the department; or
 - (b) The use of drones in a manner otherwise prohibited under this section if the purpose of the use is to benefit wildlife management or habitat or for the protection of property.
 - (3) Nothing in this section is meant to limit the use of drones by a person who is lawfully engaging in activities authorized under the commercial fishing laws.
 - (4) As used in this section, “drone” means:
 - (a) An unmanned flying machine;
 - (b) An unmanned water-based vehicle; or
 - (c) Any other vehicle that is able to operate in the air, in or under the water or on land, either remotely or autonomously, and without a human occupant.

CAPTIONS

SECTION 15. The unit and section captions used in this 2016 Act are provided only for the convenience of the reader and do not become part of the statutory law of this state or express any legislative intent in the enactment of this 2016 Act.

EMERGENCY CLAUSE

SECTION 16. This 2016 Act being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this 2016 Act takes effect on its passage.

(State of Oregon, 2016, March 1)





Oregon House Bill 3047

Sponsored by Representative HUFFMAN
AN ACT Relating to unmanned aircraft systems; creating new provisions; amending ORS 837.340 and 837.365; and declaring an emergency. Be It Enacted by the People of the State of Oregon:

SECTION 1. ORS 837.365, as amended by section 2, chapter 72, Oregon Laws 2016, is amended to read:

837.365. [A person commits a Class A misdemeanor if the person intentionally, knowingly or recklessly operates an unmanned aircraft system that is capable of firing a bullet or projectile or otherwise operates an unmanned aircraft system in a manner that causes the system to function as a dangerous weapon as defined in ORS 161.015.]

(1) Except as provided in subsection (2) of this section, a person may not intentionally, knowingly or recklessly operate or cause to be operated an unmanned aircraft system that is capable of firing a bullet or projectile or otherwise operate or cause to be operated an unmanned aircraft system in a manner that causes the system to function as a dangerous weapon as defined in ORS 161.015.

(2)
(a) Except as provided in paragraphs (b) and (c) of this subsection, violation of subsection (1) of this section is a Class A misdemeanor.

(b) If the person intentionally, knowingly or recklessly operates an unmanned aircraft system to fire a bullet or projectile or otherwise operates an unmanned aircraft system in a manner that causes the system to function as a dangerous weapon as defined in ORS 161.015, violation of subsection (1) of this section is a Class C felony.

(c) If the person intentionally, knowingly or recklessly operates an unmanned aircraft system to fire a bullet or projectile or otherwise operates an unmanned aircraft system in a manner that causes the system to function as a dangerous weapon as defined in ORS 161.015, and the operation of the unmanned aircraft system causes serious physical injury to another person as both terms are defined in ORS 161.015, violation of subsection (1) of this section is a Class B felony.

(3)
Subsection (1) of this section does not apply if:
(a) The person uses the unmanned aircraft system to release, discharge, propel or eject a nonlethal projectile for purposes other than to injure or kill persons or animals;

(b) The person uses the unmanned aircraft system for nonrecreational purposes in compliance with specific authorization from the Federal Aviation Administration;

(c) The person notifies the Oregon Department of Aviation, the Oregon State Police and any other agency that issues a permit or license for the activity requiring the use of the unmanned aircraft system of the time and location at which the person intends to use an unmanned aircraft system that is capable of releasing, discharging, propelling or ejecting a projectile at least five days before the person uses the system;

(d) If the person intends to use an unmanned aircraft system that is capable of releasing, discharging, propelling or ejecting a projectile in an area open to the public, the person provides reasonable notice to the public of the time and location at which the person intends to use the unmanned aircraft system; and

(e) The person maintains a liability insurance policy in an amount not less than \$1 million that covers injury resulting from use of the unmanned aircraft system.

(4) The notification requirement of subsection (3)(c) of this section does not apply to:

(a) A career school licensed under ORS 345.010 to 345.450;

(b) A community college as defined in ORS 341.005;

(c) An education service district as defined in ORS 334.003;

(d) The Oregon Health and Science University;

(e) A public university listed in ORS 352.002;
or



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(f) An institution that is exempt from ORS 348.594 to 348.615 under ORS 348.597 (2).

(5) Notwithstanding subsection (3) of this section, a person may not use an unmanned aircraft system that is capable of releasing, discharging, propelling or ejecting a projectile for purposes of crowd management.

SECTION 2. ORS 837.340 is amended to read: 837.340.

(1) A law enforcement agency may operate an unmanned aircraft system, acquire information through the operation of an unmanned aircraft system, or disclose information acquired through the operation of an unmanned aircraft system, for the purpose of reconstruction of a specific crime scene or accident scene, or similar physical assessment, related to a specific [criminal] investigation.

(2) The period that a law enforcement agency may operate an unmanned aircraft system under this section may not exceed five days for the purpose of reconstruction of a specific crime scene or accident scene, or similar physical assessment, related to a specific [criminal] investigation.

SECTION 3. Section 4 of this 2017 Act is added to and made a part of ORS 837.300 to 837.390.

SECTION 4.

(1) Except as provided in subsection (2) of this section, a person may not operate an unmanned aircraft system over the boundaries of privately owned premises in a manner so as to intentionally, knowingly or recklessly harass or annoy the owner or occupant of the privately owned premises.

(2) Subsection (1) of this section does not apply to the use of an unmanned aircraft system by a law enforcement agency under ORS 837.335.

(3)

(a) Except as provided in paragraphs (b) and (c) of this subsection, violation of subsection (1) of this section is a Class B violation.

(b) If, at the time of the offense, the person has one prior conviction under this section, violation of subsection (1) of this section is a Class A violation.

(c) If, at the time of the offense, the person has two or more prior convictions under this section, violation of subsection (1) of this section is a Class B misdemeanor.

(d) If the court imposes a sentence of probation for a violation under paragraph (c) of this subsection, the court may order as a condition of probation that the person may not possess an unmanned aircraft system.

SECTION 5. This 2017 Act being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this 2017 Act takes effect on its passage.

Passed by House April 20, 2017 Repassed by House June 15, 2017

(State of Oregon, 2017, June 15)





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