DRONES: KNOW BEFORE YOU FLY

GRAND JURY 2015-2016

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EXECUTIVE SUMMARY

Recent exponential growth in the purchase of low cost unmanned aircraft, popularly called drones, has created new issues for all consumers and government entities regarding safety and privacy. What was once a relatively small, build-it-yourself hobby segment has evolved into a much larger population of consumers interested in using drones as platforms for low cost still and video photography. In the past, the hobby community organized itself into self-policing groups which functioned according to acceptable community standards. Now consumers purchasing drones are much more likely to operate them outside any organized activity, and this raises questions and concerns about safety and privacy.

The Federal Aviation Administration (FAA) is responsible for all airspace in the United States, and issues operational guidelines for aircraft. It has chosen to require registration of a drone weighing more than 0.55 lbs. (8.8oz.), but less than 55 lbs., and used solely for outdoor hobby or recreation. The FAA has not addressed the use of drones operated at altitudes below 400 ft. with the exception of requiring operator registration. Registration creates a unique FAA identification number which must be marked on the registered aircraft. The new FAA registration requirement provides local law enforcement with the means for tracing ownership of drones and gives teeth to any local ordinances that may be enacted in the future.

Concurrent with the publication of this report, legislation is going through Congress that could affect local efforts to regulate the design, ownership, and operation of drones. This could affect the recommendations of this report. As with all pending legislation, however, it could change significantly prior to passage, or even fail to pass.

Governor Brown recently vetoed several drone bills that had bipartisan support citing existing laws that already prohibit interference with first responder duties. Meanwhile, local communities in California have experienced several serious incidents involving interference with fire-fighting and law enforcement aircraft, as well as complaints regarding invasion of privacy. Since neither the Federal nor California State governments have yet interceded, regulation falls to local communities to enact ordinances tailored to local use of these drones.

In December 2015, the City of Los Angeles passed an ordinance, based upon FAA operational guidelines, which could serve as a model for the County of Orange and its cities. As a result of this investigation and in the interest of public safety, the Grand Jury recommends that cities and the county develop local ordinances and promote drone education.

BACKGROUND

Scope of this Report

The Grand Jury investigated the vulnerability of the Orange County Fire, Police, and Sheriff/Coroner Departments to the anticipated increase in ownership of privately-owned hobby drones, but restricted examination of the topic of drones to the expanding recreational/hobbyist market and its consequences for Orange County's emergency responders. Therefore this investigation does not include drones used for commercial purposes such as surveying, entertainment industry activities and news gathering, or publicly owned drones, such as those used by law enforcement and public safety entities.

The Market

Until recently, the remotely piloted aircraft community was a relatively small hobbyist group primarily interested in building and piloting model aircraft. In the past, building a remote-controlled aircraft entailed a large commitment of time and energy. Flying club enthusiasts enforced piloting norms and behavior. However, as low-cost drones have become available, the self-regulating influence of the hobbyist/modeling community has waned. In addition to inexpensive drones, economical high resolution still and video cameras are available everywhere. The public's coupling the two has led to a new and very large market – the hobbyist/recreational user.

Reasons for the Current Focus on Drones

The publication *Money Watch* estimated that more than one million small drones were sold in 2015. Speaking at an industry conference, Rich Swayze, FAA Assistant Administrator for Policy, International Affairs and Environment, predicted "a million drones under people's Christmas trees." A senior industry analyst at Frost & Sullivan said the FAA's guess was fairly accurate. Mr. Swayze estimated hobby drone sales of 714,000 and about 214,000 commercial drone sales for 2015, for a total of slightly less than 1 million (Berr 1).

While most new owners will operate responsibly, rogue or careless users may become a problem. In 2015, San Bernardino County had two incidents where a drone caused a fire-helicopter to stop dropping water in order to avoid a collision (North Fire 1-2). A Los Angeles County police-helicopter also had a similar experience (Serna 1-2).

Safety is a prime concern for other airborne vehicles, such as incoming and outgoing aircraft at the Orange County airports, as well as fixed wing and rotary aircraft operated by the Orange County Fire Authority, the Sheriff/Coroner's Department, and all first responders. Encounters

with small drones that enter restricted airspace have the potential for causing lethal damage, and county officials have expressed concern for the safety of the general public who may be hit by drones flying at very low altitudes. The new market and the way consumer drones can be flown raise an important question for Orange County municipalities: Are these consumer drones safe for operation in a local setting?

The Grand Jury also recognizes, and briefly considered, the issue of privacy. Drones flying over private property may lead to conflicts with property owners. Drones flying over public property, such as beaches and parks, may also lead to conflicts over the public enjoyment of such venues. Several cities reported concerns with privacy during this Grand Jury investigation. While these concerns do not rise to the level of statistical evidence, they do raise awareness of the nature of this new problem. Certainly, local municipalities may wish to create ordinances to address specific issues involving these small drones. (Law1). Privacy is a valid concern but the scope of this investigation is focused on the safety issues for our first responders.

METHODOLOGY

The Grand Jury conducted research two ways:

1. Online and through print publications such as newspapers, professional journals, FAA Press Releases and numerous web sites. In conducting online and print research, the Grand Jury studied information about the consumer drone market, and current and pending municipal, state and federal legislation. It also looked at safety issues and researched incidents involving small drones.

2. Collection of original data from Orange County sources:

   From September 21 to November 4, 2015, the Grand Jury conducted a survey among Orange County stakeholders. This included all thirty-four cities and four additional entities: John Wayne Airport, Fullerton Municipal Airport, the Orange County Fire Authority and the Sheriff/Coroner Department. This survey and subsequent interviews asked about experiences with drones, plans for any local legislation relating to small drones and whether or not the entities had or contemplated plans to educate the public in the use of small drones.

INVESTIGATION AND ANALYSIS

The FAA is responsible for all airspace, but, with the exception of requiring operator registration, has not addressed the use of drones operated at altitudes below 400 ft.

A drone is any aircraft without an on-board pilot. Within this definition there is an incredible range in shapes, sizes, and capabilities that characterize today's unmanned aircraft. Personal

drones are currently a hobbyist's item most often used for simple entertainment or for aerial photography.

A drone system generally consists of three elements: the platform, command and control, and the payload.

- **Platform.** The term refers to the actual aircraft. In general it may be fixed-wing or rotary. Currently, consumers prefer various forms of rotary or helicopter platforms because of their hovering ability. The platform is sometimes given the acronym UAV for Unmanned Aerial Vehicle.
- **Command and Control.** The term refers to the operator on the ground and the equipment used to send signals to the platform, telling it what maneuvers to make, how to navigate and how to operate the onboard sensors.
- **Payload.** The term refers to any package mounted on the platform such as a still or video camera or other sensor.

While all three elements are technically necessary for a complete system, the portion consisting of the platform plus payload, namely, that part which is airborne, is generally called the drone. There is, however, some confusion in terminology, as these systems have various acronyms which are often used interchangeably. Terms, such as unmanned aerial systems (UAS) or small unmanned aerial systems (sUAS) are good examples of interchangeable terms. The acronym UAV (Unmanned Aerial Vehicle) is used for both the platform and payload or the entire system. For clarity, the consumer must consider the context. For example, FAA regulations regarding weight, which are concerned only with the airborne portion, may use only the acronym UAS.

Who has Jurisdiction over Hobbyist-Drones?

Federal Aviation Administration (FAA)

The Federal Aviation Act of 1958 established the FAA and made it responsible for the control and use of navigable airspace within the United States. The FAA created the National Airspace System (NAS) to protect persons and property on the ground, and to establish a safe and efficient air space environment for civil, commercial, and military aviation.

In 2012 Congress passed the FAA Modernization and Reform Act (FMRA), which carved out a special exemption for model aircraft. The FAA issued guidelines for model aircraft operations which include the following requirements (Model, 1):

- Fly below 400 Feet and remain clear of surrounding obstacle
- Keep the aircraft within visual line of sight (VLOS) at all times
- Remain clear of and do not interfere with manned aircraft operations

- Do not fly within 5 miles of an airport unless you contact the airport and control tower before flying
- Do not fly near people or stadiums
- Do not fly an aircraft that weighs more than 55 lbs.
- Do not be careless or reckless with your unmanned aircraft; you could be fined for endangering people or other aircraft.

Hobby/recreational drones weighing less than 55 lbs. are currently exempt from the FAA Certification of Authorization (COA) but must operate in accordance with community-based safety guidelines such as those required by the Academy of Model Aeronautics (AMA), a national organization recognized by the FAA. The AMA Safety Code allows the public to fly radio-controlled models in First-Person View (FPV) mode and requires a "spotter" to avoid a collision. The AMA prohibits public use of vision/video glasses or goggles while operating a drone. AMA members can take advantage of training programs and mentorships, and these are guided by best practices. The AMA has also recommended guidelines for selecting flying-sites that have worked well for decades (Appendix G.)

Section 336 of the 2012 FMRA prohibits the FAA Administrator from promulgating rules or regulations regarding model aircraft flown strictly for hobby or recreational purposes. There are some however who believe other governmental agencies, including local jurisdictions, may issue rules within this domain. Others believe that only the FAA may hold sway there. Both sides do agree that other entities may impose rules related to takeoff and landing of drones.

In November 2015, the FAA began to require registration of the small systems classified as UAS whose platform plus payload weighs between 0.55 lbs. (8.8 oz.) and 55 lbs. These specifications are not related to altitude of operation, but are based solely on weight. Since these small drones may be used for commercial purposes or recreation, there are different registration criteria for each. This registration requirement is a powerful tool for identifying owners of drones who may, intentionally or not, fly in restricted locations or who create a danger or nuisance to the public (UAS 1-10). It provides a means for enforcing rules and imposing penalties. Registration data is available to the public at http://registry.faa.gov/aircraftinquiry/ . As of December 21, 2015 registration is required (FAA Small 1-2). Requirements are listed below:

- UAS that weighs 8.8 ounces to 55 pounds needs registration before operating;
- Registration numbers must be affixed to aircraft and the number covers any/all UAS the registrant owns;
- Operators must be at least 13 years old; and
- A fee of $5.00 must accompany online registration.

Nearly 300,000 owners registered their small, unmanned aircraft in the first 30 days of the FAA online registration requirement (Rosenberg 1).

Concurrent with the publication of this report, the United States Congress is considering the Federal Aviation Administration Reauthorization Act of 2016. The legislation contains a provision calling for federal pre-emption of State or local laws which may affect the ability of local governments to regulate the design, ownership, and operation of drones. As with all pending legislation, any of the provisions could change significantly before passage. Therefore, the Grand Jury advises that the County and cities in Orange County monitor the legislation as they consider responses to the recommendations of this report.

California State Drone Laws

Although a number of bills regulating the use of drones have passed in both houses of the California legislature, Governor Jerry Brown signed only one: AB 856, which expands privacy protections to prevent paparazzi from flying drones over private property. The Governor stated that existing penal codes cover the criminality of any interference with emergency responders.

The two California laws he refers to are Penal Code 148, sections 148.1, 148.2 and Penal Code 402. Briefly stated, each code says every person who willfully resists or interferes with the lawful efforts of any public officer, peace officer, fireman, or emergency rescue personnel in the discharge or attempts to discharge an official duty is guilty of a misdemeanor (Appendix C,D,E).

The Governor did not rule out future legislation at the state level. He added that while drone technology raises novel issues, it needs to be considered more carefully.

Ordinances in Neighboring Communities

While some states, including California, have taken a go-slow approach, other communities within the state have recognized the inadequacy of this approach by enacting local drone ordinances tailored to specific local conditions (State 1-3). On October 14, 2015, the Los Angeles City Council approved Ordinance Number 183912 of the Los Angeles Municipal Code covering hobbyist/recreational and commercial drones. This ordinance reflects FAA civilian drone guidelines and makes, among other things, three salient points:

1. No Person shall operate any Model Aircraft within the City Los Angeles and within 5 miles of an airport without the prior express authorization of the airport air traffic control tower.
2. No Person shall operate any Model Aircraft within the City of Los Angeles in a manner that interferes with manned aircraft, and shall always give way to any manned aircraft.

3. No Person shall operate any Model Aircraft within the City of Los Angeles more than 400 feet above the earth's surface.

Violation of this ordinance is a misdemeanor, punishable by up to $1,000 in fines and six months in jail (Appendix A).

Another nearby locality that has enacted a drone ordinance is the city of Poway, in San Diego County. On September 1, 2015 (later updated in October 2015) the Poway City Council approved an ordinance that bans use of recreational drones in certain designated areas during emergency situations, particularly brush fires (Jones, 1-2).

Safety Concerns

Airport Safety

The most serious safety concerns involve interaction between small drones and manned aircraft, especially near airports. The *Bard College Center for Study of the Drone* report is a comprehensive and detailed analysis of incidents involving unmanned aircraft and manned aircraft in the U.S. National Airspace System. Bard College analyzed records from 921 incidents involving drones and manned aircraft in the national airspace, dating from December 17, 2013 to September 12, 2015 (Gettinger, 5). Two hundred forty six (246) of the 340 drones identified in the Bard report were multirotor (i.e. quadcopters, hexacopters, etc.), which are currently the most desirable for the consumer market. These multirotors represent nearly three quarters of the drones involved and are indicative of the potential threat to manned aircraft.

Recent incidents involved a pilot or an air traffic controller spotting a drone flying within or near the flight paths of manned aircraft but not posing an immediate threat of collision. Other encounters involved incidents of manned aircraft traveling close enough to a drone to meet the Federal Aviation Administration's definition of a "near midair collision" or close enough that there was a possible danger of collision. It is important to note over 90% of all incidents occurred *above* 400 feet, the maximum altitude at which hobby drones are allowed to fly.

The Bard College report noted that a majority of the incidents reported occurred within five miles of an airport (prohibited airspace for all drones, regardless of the altitude at which they are flying). While John Wayne Airport was not part of the report, the Bard College report does show that there are a significant number of drones that violate FAA guidelines. With the number of small drones increasing, the potential for lethal incidents also increases. Since Orange County is home to one large, busy airport, John Wayne, and hosts another smaller airport, Fullerton Municipal, this information is cause for local concern (Pilot, 1-2).

Fire and Law Enforcement Safety

A drone in the immediate airspace of any aircraft is a serious, physical threat. In July 2015 firefighting aircraft were grounded for 26 minutes in Southern California because of fear of collisions with five unmanned aerial vehicles that had been seen in the area. It was the fourth time in as many weeks that drones had hampered firefighters in Southern California (Guttman, July 2015). Public safety makes this a big issue. Our first responders need community support as they perform their duties. Dodging drones should not be an obstacle to our county's emergency professionals in how they conduct their business.

Orange County first-responders, Fire, Police and Sheriff, have the same safety concerns as airports. They recognize when drones are encountered at an emergency incident, aircraft operations must be suspended until the hazard can be mitigated. While assisting San Bernardino with the Lake Fire, the Orange County Fire Authority experienced a "near miss." First responders recognize the potential for danger. A police helicopter, tracking a stolen vehicle, could be seriously challenged with a near-miss drone. The drone could be pulled into a helicopter engine or collide with its windshield. A fire helicopter, facing the same danger, could be forced off-course in order to avoid impact.

The Grand Jury learned another concern of custodial law enforcement is the potential use of drones to smuggle contraband into detention facilities. One deputy described an incident in which a drone was used to drop a tennis ball filled with drugs into the recreation area.

No one wants a mid-air collision to be the wake-up call for our communities. FAA Administrator Michael Huerta said, "If you don't know the rules, how can you follow them?" Accidents are inevitable in the absence of carefully considered local ordinances and educational opportunities for hobbyist drone owners.

Personal Safety Concerns

Drones flying over large public gatherings at the beach or sporting events may also pose a potential for injury or damage if the drone is operated improperly. On December 23, 2015, a World Cup ski race was interrupted when a drone fell out of the sky just missing a racer during his run (Associated Press). While this incident involved a commercial drone, it indicates the potential threat drones pose to personal safety.

Drone Ordinance Survey

The Grand Jury sent a ten question drone survey to all 34 cities in the County, as well as the Orange County Fire Authority, John Wayne Airport, Fullerton Municipal Airport and the Sheriff/Corner Department. The Grand Jury offered three fact-finding options: schedule a personal visit; schedule a phone interview; or return a written response. The majority of cities responded in writing. Four cities did not answer, creating a response rate of 88%.

The survey questions were divided into three areas: existing policy; experience; and education.

1. Does your agency/department have a policy for the operation of privately-owned drones?
2. Does your agency/department have a policy for the operation of Commercial drones?
3. If there are no policies, why not?
4. Do you feel creating or supporting a drone policy will have a financial impact on your budget? How?
5. Does your agency/department allow first responders to use drones for emergency response?
6. Have there been any reported drone accidents or "near misses" by your agency/department?
7. Have there been any incidents or public complaints involving drones in your jurisdiction?
8. Has physical damage of property, resulting from drone use, been addressed?
9. If a city resident has concerns with a hovering drone, whom should they call or contact?
10. Are there agency-sponsored educational programs available for public awareness regarding the safety and danger factors involved with operating a drone?

The survey used open-ended questions to allow each entity to share knowledge or concerns. The Grand Jury reviewed and categorized all responses for analysis and statistical review. The respondents were as follows: City Managers, Assistant City Manager, Senior Executive Airport Personnel, Assistant Chief of Operations, Chief of Police, Sergeant, and Deputy Chief. An Executive Secretary stated her boss answered "No to everything."

Responses from the Cities

Policy- Questions #1-5

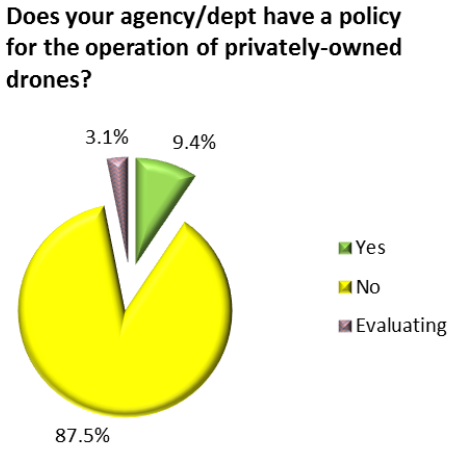

Figure 1

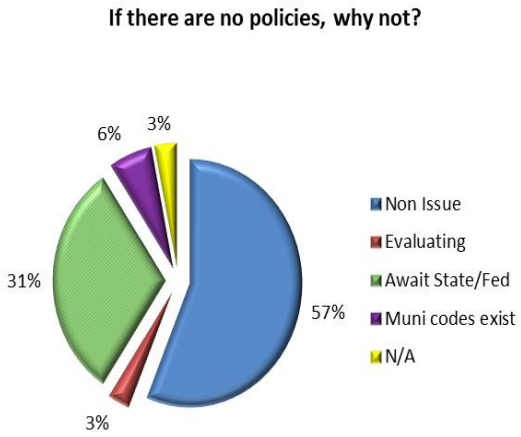

Figure 2

The first five survey questions related to the existence of any policy concerning drones. The results show that the vast majority of Orange County cities have not addressed the presence of small drones. The survey indicated 88% of responding Orange County cities do not have a policy or ordinance that addresses the operation of privately-owned recreational drones (Figure 1).

Fifty seven percent (57%) of responding cities consider drones a non-issue. Examples of comments received from some cities include: "our council has not given us direction"; "we have not experienced any drone problems"; and "there is little to no issue with our police department." However there are exceptions: Huntington Beach has a municipal code that restricts remote controlled model aircraft, which they are updating to include both private and commercial drones. Dana Point has a municipal code but only in relation to the protection of environmentally sensitive habitat areas. Thirty one percent (31%) of responding cities are interested in a policy while stating they are awaiting State or Federal guidelines (Figure 2). The Orange County Fire Authority agrees a drone poses a collision risk to firefighting aircraft and, if spotted, air operations must temporarily cease. In response to whether or not implementing a drone ordinance would have a budgetary effect, half of those responding do not believe that it would have a significant impact. Those concerned about the impact on their budget cite the following reasons: staff and legal resources needed to create and enforce an ordinance, along with the costs to update websites/newsletters, and creating and hosting community educational workshops.

Experience with Small, Privately Owned Drones- Questions #6-9

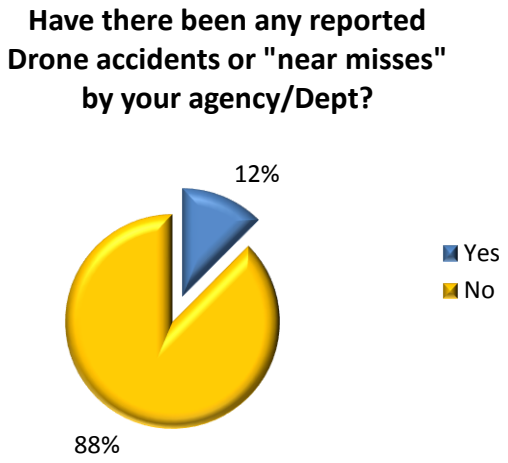

Figure 3

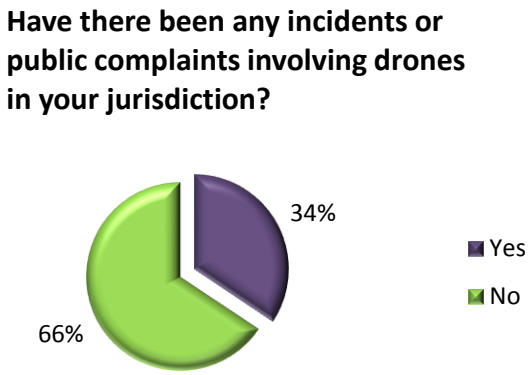

Figure 4

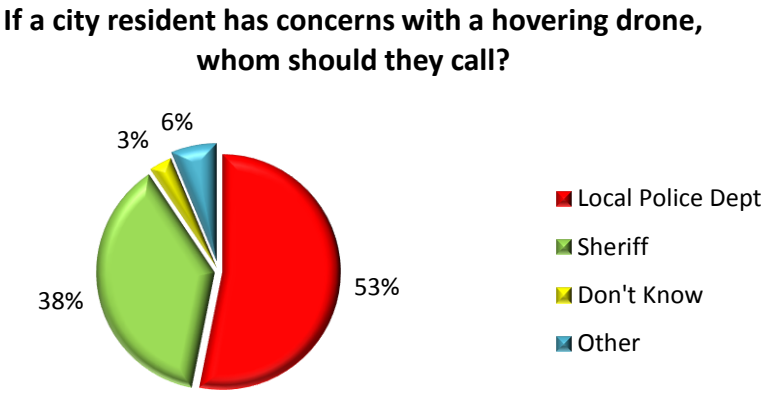

Figure 5

Four of the survey questions asked about experience with drones and whether there were reported incidents or complaints. Eleven of the respondent cities reported complaints involving small drones (Figure 4), including four respondents who reported accidents or near misses (Figure 3).

The FAA now receives more than 100 UAS sightings each month from pilots, citizens, and law enforcement. The Grand Jury survey revealed that Orange County cities received nearly 100 drone-related complaints over a period of one year. The Grand Jury feels it is short-sighted for our county and cities to ignore this emerging concern.

To illustrate one such complaint, consider that Huntington Beach reported the Air Support Unit of their police department employs a helicopter to assist with daily calls for service. This helicopter has experienced several near misses with drones during routine air patrols and at active crime scenes. Huntington Beach also noted that residents have complained about drones hovering over their bedroom windows.

Another beach city also received reports of drones flying over the pier area and recording sunbathers on the beach. On a different occasion, a Go-Pro camera fell from a drone during an event and hit the ground near several people, including children. Consider too, that one city manager reported 37 calls for service involving small drones while another city manager reported 29 complaints. While hosting a large July 4th parade/festival, a city received several complaints of nuisance drones in spite of an event flyer stating "NO DRONES."

Most respondents identified a law enforcement agency (police/sheriff) as the source to notify if a resident has a drone concern. Other entities responded with answers as varied as Community Services, Code Enforcement, Public Safety, City Manager, 911, and FAA. The Grand Jury noted the lack of education and consistency in the responses. Members of the public who witness potential incidents have no information about how and where to report. The OCSD Bomb Squad said reporting a drone incident is a "major under-reported event." This failure to report indicates a result of lack of educational information or policy.

Educational Outreach to the Small Drone Community- Question #10

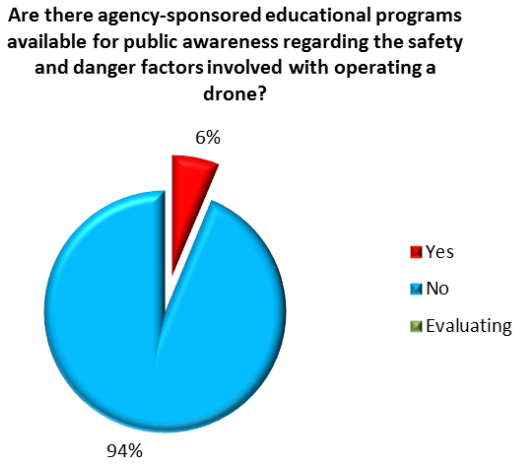

Figure 6

To provide guidance to hobbyists, the FAA has partnered with three of the largest hobby drone manufacturers to create the *Know before You Fly* website www.knowbeforeyoufly.org. This website is heavily promoted by the FAA, hobby drone manufacturers, and responsible hobby

drone owners (AMA 1-2). The B4UFLY smartphone application is another educational resource (FAA Releases 1).

In addition to educational resources provided by the FAA, two of the cities reported having educational resources available to educate operators of hobbyist drones. Costa Mesa has a Video/TV production CMTV3. Huntington Beach plans to include drone safety information, along with other safety programs, on their Facebook page. These two cities are the exception. The majority of the cities responded to Question #10 on our survey to the effect that there are no city sponsored educational programs available at this time for public awareness regarding the safety and danger of operating a drone. The various explanations included:

- "Educational materials are available with an online search"
- "We can put an FAA flyer in each mailer that goes out to all residents"
- "The Aircraft Owners and Pilots Association (AOPA) have excellent educational materials"
- "We have a bi-weekly newsletter online, but no drone info on it"
- "Our goal is to distribute information from State and Federal sources"
- "We could consider a quarterly newsletter"
- "The schools should be teaching drone safety"
- "We are a very small department"

The county and cities have a myriad of untapped, inexpensive options with which to speak to the local residents. Notices delivered to residents via postal or electronic mail should contain information on drone safety. FAA- Model Aircraft flyers should be available at libraries, city buildings, police departments, and schools. County and city websites should address safety issues. Parades, festivals and street fairs should promote drone safety.

Additionally, Orange County has nearly 5,000 Homeowners Associations. Most HOAs have a website or newsletter. The Davis-Stirling Common Interest Act suggests each HOA board create a rule to address drone noise, safety and privacy issues. If drones are flown by people outside the association, the HOA would need to go to the city or county to seek a ban. (Davis-Stirling)

Know Before You Fly

Except for a small smattering of inconsequential incidents, there have been no major problems reported. This is good news, considering that airports and fire/law enforcement departments have the most at stake from drone mishaps. Hobby-recreational drones are the "new-kid on the block." It is no surprise that 94% of our cities have no educational programs available for public awareness regarding the safety and danger factors involved with flying a drone. Most drone operators want to do the right thing but where are the guides, mentors or teachers? This is a new

generation challenge. The safety issues that have surfaced world-wide should elevate this concern to top of the "needs-attention" list. Having a drone ordinance on record would be saying that this is what our community standards are. The public needs to know and our first responders need to feel community support. No one should be at risk because somebody wants a video to go viral.

FINDINGS

In accordance with California Penal Code Section 933 and Section 933.05, the 2015-2016 Grand Jury requires (or, as noted, requests) responses from each agency affected by the findings presented in this section. The responses are to be submitted to the Presiding Judge of the Superior Court.

Based on its investigation titled "*Drones: Know Before You Fly"*, the 2015-2016 Orange County Grand Jury has arrived at seven principal findings, as follows:

F.1. Recreational drones have greatly increased in number since December 2015 and it is probable their unregulated use will pose significant threats to public safety and privacy in Orange County cities and unincorporated areas.

F.2. With the exception of the recent Federal Aviation Administration registration rule, recreational drone owners are largely self-policed, which leads to a wide range of behavior.

F.3. Most of the cities and unincorporated areas of the County of Orange do not have a drone ordinance, nor do they have any immediate plans to enact an ordinance in the near future.

F.4. Most of the cities provide no educational programs for public awareness of the safety issues connected to recreational drones.

F.5. Some Orange County cities, despite recognizing potential issues with drones, are awaiting drone-related legislative action or other guidance by the State of California or FAA before enacting local ordinances.

F.6. The FAA-required registration of recreational drones provides a useful tool for local enforcement of drone ordinances.

F.7. Orange County cities have not established a procedure for reporting drone incidents, which results in under-reporting of drone safety and privacy events.

RECOMMENDATIONS

In accordance with California Penal Code Section 933 and Section 933.05, the 2015-2016 Grand Jury requires (or, as noted, requests) responses from each agency affected by the recommendations presented in this section. The responses are to be submitted to the Presiding Judge of the Superior Court.

Based on its investigation titled "*Drones: Know Before You Fly"*, the 2015-2016 Orange County Grand Jury makes the following nine recommendations:

R.1. Each City Council should direct its City Attorney to provide a report to the city's police department and City Council on existing laws that can be applied to the use of recreational drones in the city's jurisdiction by December 30, 2016. (F.2., F.3., F.5., F.6.)

R.2. Each City should adopt a recreational drone ownership and operation ordinance, with regulations similar to those found in Los Angeles City ordinance #183912, by March 31, 2017, to the extent not preempted or superseded by Federal law or Federal regulations. (F.1., F.2., F.3., F.5., F.6.)

R.3. Each City should inform its citizens about laws and ordinances that apply to recreational drone operators through print media, city-related web sites, social media sites and/or public forums by March 31, 2017. (F.4., F.6.)

R.4. Each City should establish and publish on its website a point of contact for drone-related citizen complaints by December 30, 2016. (F.7.)

R.5. Each City should post FAA drone ownership and operation educational links on city-related websites, newsletters, and flyers by December 30, 2016. (F.4.)

R.6. The Orange County Board of Supervisors should direct County Counsel to provide a report to the Orange County Sheriff-Coroner Department and the Board of Supervisors on existing laws that can be applied to the use of recreational drones in county-governed parks and unincorporated areas by December 30, 2016. (F.2., F.3., F.6.)

R.7. The County should adopt a recreational drone ownership and operation ordinance similar to Los Angeles City Ordinance #183912 for the parks and unincorporated areas under its jurisdiction by March 31, 2017, to the extent not preempted or superseded by Federal law or Federal regulations. (F.1., F.2., F.3., F.6.)

R.8. The County should inform its citizens about laws and ordinances that apply to recreational drone operators through print media, County-related web sites, social media sites and/or public forums by March 31, 2017. (F.4., F.6.)

R.9. The County and each City should formally gather data on recreational drone incidents within their jurisdictions and review these data annually and report the results publicly. The first analysis and publication should occur within 1 year of the publication of this report. (F.1., F.2., F.3., F.7.)

REQUIRED RESPONSES

The California Penal Code Section 933 requires any public agency which the Grand Jury has reviewed, and about which it has issued a final report, to comment to the Presiding Judge of the Superior Court on the findings and recommendations pertaining to matters under the control of the agency. Such comment shall be made *no later than 90 days* after the Grand Jury publishes its report (filed with the Clerk of the Court); except that in the case of a report containing findings and recommendations pertaining to a department or agency headed by an elected County official (e.g. District Attorney, Sheriff, etc.), such elected County Official shall comment on the findings and recommendations pertaining to the matters under that elected officials control *within 60 days* to the Presiding Judge with an information copy sent to the Board of Supervisors.

Furthermore, California Penal Code Section 933.05, subdivisions (a), (b), (c), details, as follows, the manner in which such comment(s) are to be made:

(a) As to each Grand Jury finding, the responding person or entity shall indicate one of the following:

(1) The respondent agrees with the finding

(2) The respondent disagrees wholly or partially with the finding, in which case the response shall specify the portion of the finding that is disputed and shall include an explanation of the reasons therefore.

(b) As to each Grand Jury recommendation, the responding person or entity shall report one of the following actions:

(1) The recommendation has been implemented, with a summary regarding the implemented action.

(2) The recommendation has not yet been implemented, but will be implemented in the future, with a time frame for implementation.

(3) The recommendation requires further analysis, with an explanation and the scope and parameters of an analysis or study, and a time frame for the matter to be prepared for discussion by the officer or head of the agency or department being investigated or reviewed, including the governing body of the public agency when applicable. This time frame shall not exceed six months from the date of publication of the Grand Jury report.

(4) The recommendation will not be implemented because it is not warranted or is not reasonable, with an explanation therefore.

(c) If a finding or recommendation of the Grand Jury addresses budgetary or personnel matters of a county agency or department headed by an elected officer, both the agency or department head and the Board of Supervisors shall respond if requested by the Grand Jury, but the response of the Board of Supervisors shall address only those budgetary /or personnel matters over which it has some decision making authority. The response of the elected agency or department head shall address all aspects of the findings or recommendations affecting his or her agency or department.

Comments to the Presiding Judge of the Superior Court in compliance with Penal Code Section 933.05 are required from:

Responses Required:

	Required Respondent		Findings								Recommendations								
			F1	F2	F3	F4	F5	F6	F7		R1	R2	R3	R4	R5	R6	R7	R8	R9
1	City of Aliso Viejo		X	X	X	X	X	X	X		X	X	X	X	X				X
2	City of Anaheim		X	X	X	X	X	X	X		X	X	X	X	X				X
3	City of Brea		X	X	X	X	X	X	X		X	X	X	X	X				X
4	City of Buena Park		X	X	X	X	X	X	X		X	X	X	X	X				X
5	City of Costa Mesa		X	X	X	X	X	X	X		X	X	X	X	X				X
6	City of Cypress		X	X	X	X	X	X	X		X	X	X	X	X				X
7	City of Dana Point		X	X	X	X	X	X	X		X	X	X	X	X				X
8	City of Fountain Valley		X	X	X	X	X	X	X		X	X	X	X	X				X
9	City of Fullerton		X	X	X	X	X	X	X		X	X	X	X	X				X
10	City of Garden Grove		X	X	X	X	X	X	X		X	X	X	X	X				X
11	City of Huntington Beach		X	X	X	X	X	X	X		X	X	X	X	X				X
12	City of Irvine		X	X	X	X	X	X	X		X	X	X	X	X				X
13	City of La Habra		X	X	X	X	X	X	X		X	X	X	X	X				X
14	City of La Palma		X	X	X	X	X	X	X		X	X	X	X	X				X
15	City of Laguna Beach		X	X	X	X	X	X	X		X	X	X	X	X				X
16	City of Laguna Hills		X	X	X	X	X	X	X		X	X	X	X	X				X
17	City of Laguna Niguel		X	X	X	X	X	X	X		X	X	X	X	X				X
18	City of Laguna Woods		X	X	X	X	X	X	X		X	X	X	X	X				X
19	City of Lake forest		X	X	X	X	X	X	X		X	X	X	X	X				X
20	City of Los Alamitos		X	X	X	X	X	X	X		X	X	X	X	X				X
21	City of Mission Viejo		X	X	X	X	X	X	X		X	X	X	X	X				X
22	City of Newport Beach		X	X	X	X	X	X	X		X	X	X	X	X				X

	Required Respondent		Findings								Recommendations								
			F 1	F 2	F 3	F 4	F 5	F 6	F 7		R 1	R 2	R 3	R 4	R 5	R 6	R 7	R 8	R 9
23	City of Orange		X	X	X	X	X	X	X		X	X	X	X	X				X
24	City of Placentia		X	X	X	X	X	X	X		X	X	X	X	X				X
25	City of Rancho Santa Margarita		X	X	X	X	X	X	X		X	X	X	X	X				X
26	City of San Clemente		X	X	X	X	X	X	X		X	X	X	X	X				X
27	City of San Juan Capistrano		X	X	X	X	X	X	X		X	X	X	X	X				X
28	City of Santa Ana		X	X	X	X	X	X	X		X	X	X	X	X				X
29	City of Seal Beach		X	X	X	X	X	X	X		X	X	X	X	X				X
30	City of Stanton		X	X	X	X	X	X	X		X	X	X	X	X				X
31	City of Tustin		X	X	X	X	X	X	X		X	X	X	X	X				X
32	City of Villa Park		X	X	X	X	X	X	X		X	X	X	X	X				X
33	City of Westminster		X	X	X	X	X	X	X		X	X	X	X	X				X
34	City of Yorba Linda		X	X	X	X	X	X	X		X	X	X	X	X				X
35	OC Board of Supervisors		X	X	X			X								X	X	X	X

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APPENDICES

Appendix A: Los Angeles City Municipal Ordinance

ORDINANCE NO. 183912

An ordinance adding Section 56.31 to Article 6 of Chapter V of the Los Angeles Municipal Code to impose community-based safety requirements on the operation of Model Aircraft and to impose restrictions consistent with certain Federal Aviation Rules on the operation of both Model Aircraft and Civil Unmanned Aircraft Systems (UASs), commonly known as drones.

WHEREAS, the operation of Unmanned Aircraft such as Model Aircraft and Civil UASs can at times pose a hazard to full-scale aircraft in flight and to persons and property on the ground; and

WHEREAS, imposing community-based safety requirements on the operation of Model Aircraft and imposing restrictions on the operation of both Model Aircraft and Civil UASs consistent with Federal Aviation Rules is necessary to mitigate such risks and to protect the public from the hazards associated with the operation of Unmanned Aircraft.

NOW, THEREFORE,

THE PEOPLE OF THE CITY OF LOS ANGELES DO ORDAIN AS FOLLOWS:

Section 1. A new Section 56.31 is added to Article 6 of Chapter V of the Los Angeles Municipal Code to read as follows:

SEC. 56.31. UNMANNED AIRCRAFT SYSTEMS.

(a) For purposes of this section:

1. "**Unmanned Aircraft**" shall mean an aircraft, including, but not limited to, an aircraft commonly known as a drone, that is operated without the possibility of direct human intervention from within or on the aircraft.

2. "**Unmanned Aircraft System**" shall mean an Unmanned Aircraft and associated elements, including, but not limited to, any communication links and components that control the Unmanned Aircraft.

3. "**Person**" shall have the same meaning as set forth in Subsection (a) of Section 11.01 of this Code.

4. "**Model Aircraft**" shall mean an Unmanned Aircraft or Unmanned Aircraft System operated by any Person strictly for hobby or recreational purposes.

5. "**Civil UAS**" shall mean an Unmanned Aircraft or Unmanned Aircraft System operated by any Person for any purposes other than strictly

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hobby or recreational purposes, including, but not limited to, commercial purposes or in furtherance of, or incidental to, any business or media service or agency.

6. "**Public UAS**" shall mean an Unmanned Aircraft or Unmanned Aircraft System operated by any public agency for government related purposes.

(b) The following shall apply to the operation of any Model Aircraft within the City of Los Angeles:

1. No Person shall operate any Model Aircraft within the City of Los Angeles and within 5 miles of an airport without the prior express authorization of the airport air traffic control tower.

2. No Person shall operate any Model Aircraft within the City of Los Angeles in a manner that interferes with manned aircraft, and shall always give way to any manned aircraft.

3. No Person shall operate any Model Aircraft within the City of Los Angeles beyond the visual line of sight of the person operating the Model Aircraft. The operator must use his or her own natural vision (which includes vision corrected by standard eyeglasses or contact lenses) to observe the Model Aircraft. People other than the operator may not be used in lieu of the operator for maintaining visual line of sight. Visual line of sight means that the operator has an unobstructed view of the Model Aircraft. The use of vision-enhancing devices, such as binoculars, night vision goggles, powered vision magnifying devices, and goggles or other devices designed to provide a "first-person view" from the model, do not constitute the visual line of sight of the person operating the Model Aircraft.

4. No Person shall operate any Model Aircraft within the City of Los Angeles other than during daylight hours defined as between official sunrise and official sunset for local time.

5. No Person shall operate any Model Aircraft within the City of Los Angeles more than 400 feet above the earth's surface.

6. Excluding takeoff and landing, no Person shall operate any Model Aircraft within the City of Los Angeles closer than 25 feet to any individual, except the operator or the operator's helper(s).

(c) The following shall apply to the operation of any Model Aircraft or Civil UAS within the City of Los Angeles:

1. No Person shall operate any Model Aircraft or Civil UAS within the City of Los Angeles in a manner that is prohibited by any federal statute or regulation governing aeronautics.

2. No Person shall operate any Model Aircraft or Civil UAS within the City of Los Angeles in violation of any temporary flight restriction (TFR) or notice to airmen (NOTAM) issued by the Federal Aviation Administration.

3. No Person shall operate any Model Aircraft or Civil UAS within the City of Los Angeles in a careless or reckless manner so as to endanger the life or property of another. The standard for what constitutes careless and reckless operation under this section shall be the same as the standard set forth in any federal statutes or regulations governing aeronautics including but not limited to Federal Aviation Rule 91.13.

(d) It shall be unlawful for any Person to violate or fail to comply with this section. Any Person violating the provisions of this section shall be guilty of a misdemeanor and subject to the provisions of Subsection (m) of Section 11.00 of this Code.

(e) This section shall not apply to any Public UAS operated pursuant to, and in compliance with, the terms and conditions of any current and enforceable authorization granted by the Federal Aviation Administration.

Sec. 2. The City Clerk shall certify to the passage of this ordinance and have it published in accordance with Council policy, either in a daily newspaper circulated in the City of Los Angeles or by posting for ten days in three public places in the City of Los Angeles: one copy on the bulletin board located at the Main Street entrance to the Los Angeles City Hall; one copy on the bulletin board located at the Main Street entrance to the Los Angeles City Hall East; and one copy on the bulletin board located at the Temple Street entrance to the Los Angeles County Hall of Records.

I hereby certify that this ordinance was passed by the Council of the City of Los Angeles, at its meeting of OCT 14 2015.

HOLLY L. WOLCOTT, City Clerk

By _____
Deputy

Approved 10/22/15

_____
Mayor

Approved as to Form and Legality

MICHAEL N. FEUER, City Attorney

By _____
for JANET KARKANEN
Deputy City Attorney

Date SEP 16 2015

File No. 15-0927

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DECLARATION OF POSTING ORDINANCE

I, VERONICA COLEMAN-WARNER, state as follows: I am, and was at all times hereinafter mentioned, a resident of the State of California, over the age of eighteen years, and a Deputy City Clerk of the City of Los Angeles, California.

Ordinance No.183912 – Adding Section 56.31 to Article 6 of Chapter V of the Los Angeles Municipal Code to impose community-based safety requirements on the operation of Model Aircraft and to impose restrictions consistent with certain Federal Aviation Rules on the operation of both Model Aircraft and Civil Unmanned Aircraft Systems, commonly known as drones - a copy of which is hereto attached, was finally adopted by the Los Angeles City Council on **October 14, 2015**, and under the direction of said City Council and the City Clerk, pursuant to Section 251 of the Charter of the City of Los Angeles and Ordinance No. 172959, on **October 23, 2015** I posted a true copy of said ordinance at each of the three public places located in the City of Los Angeles, California, as follows: 1) one copy on the bulletin board located at the Main Street entrance to the Los Angeles City Hall; 2) one copy on the bulletin board located at the Main Street entrance to the Los Angeles City Hall East; 3) one copy on the bulletin board located at the Temple Street entrance to the Los Angeles County Hall of Records.

Copies of said ordinance were posted conspicuously beginning on **October 23, 2015** and will be continuously posted for ten or more days.

I declare under penalty of perjury that the foregoing is true and correct.

Signed this **23rd** day of **October, 2015** at Los Angeles, California.

Veronica Coleman-Warner

Veronica Coleman-Warner, Deputy City Clerk

Ordinance Effective Date: **December 2, 2015** **Council File No. 15-0927**

Appendix B: Acronyms/Glossary

Air Space	From the ground up. Hobby drones need to remain under 400 feet from ground.
AMA	Academy of Model Aircraft
Civil Aviation drones	Numerous uses include surveying of crops, filmmaking, search and rescue, inspecting power lines, counting wildlife, law enforcement, scientific research, disaster relief and wildfires, to name a few.
Civil UAS	Unmanned aerial system (drone) used by private sector (non-government) for scientific research, company/business/non-profit, and private university.
COA	Certification of Authorization. FAA grants approval for specific flight operation.
Commercial drone	Drone used with the expectation of a sale, financial gain, or other consideration.
Commercial operator	Person who operates a drone for financial gain.
DOT	Department of Transportation
Drone	An unmanned aerial vehicle (UAV), without a human pilot aboard. Its flight is controlled either autonomously-autopilot- 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 unmanned aircraft is by the function of an automatic system or an external operator on the ground.
FAA	Federal Aviation Authority regulates U.S. airspace and defines any unmanned flying craft as a UAV. FAA is an agency of DOT.
First responder	First member of emergency response team to be on the scene of an accident or emergency.
FPV	First Person View-controlling a UAV from operator's viewpoint.
FMRA	FAA Modernization and Reform Act.
Hobbyist drone	Used for hobby/ recreational purpose. Not flown for a profit endeavor.
Manned aircraft	Human on board aircraft to operate it. (Pilot)

Model aircraft	Unmanned aircraft that is capable of sustained flight in the atmosphere, flown within visual line of sight of the person operating the aircraft and flown for hobby or recreational purposes.
Municipal code	Laws that are enacted and enforced by a city or county. Can be an ordinance.
No-Fly fields/zones	Air space off limits to all aircraft; when the Pope visited the USA, numerous NO-FLY Zones were declared by FAA.
Public UAS	Unmanned aerial system (drone) owned by our government and commonly used by law enforcement, firefighting, border patrol, disaster relief, search and rescue, Public University. Requires FAA certification.
RC	A remote control. A device used to issue commands (wirelessly) from a short distance.
RCA	Radio-Controlled Aircraft is controlled with a handheld radio transmitter, which communicates with a receiver abroad the aircraft
Recreational Drone	Used for hobby purpose; not flown for a profit-making endeavor.
sUAS	Small unmanned aerial system primarily used in civil and commercial operations, due to versatility, low initial cost and operating expenses. They weigh less than 55 pounds.
UAS	Unmanned aerial system, an aircraft without a human pilot and emphasizes other elements such as ground control stations, data links and other support equipment; also known as a drone
UAV	Unmanned aerial vehicle, an aircraft without a human pilot; commonly known as a drone. Can be remotely piloted or on autopilot.
VLOS	Visual line of site means keeping the UAS in visual-line-of-site at all times; no flying into clouds, fog, behind buildings, trees, etc.; also means unaided except for prescription glasses/contacts or sunglasses.

Appendix C: CA Penal Code Section 148.1

148.1. (a) Any person who reports to any peace officer listed in Section 830.1 or 830.2, or subdivision (a) of Section 830.33, employee of a fire department or fire service, district attorney, newspaper, radio station, television station, deputy district attorney, employees of the Department of Justice, employees of an airline, employees of an airport, employees of a railroad or bus line, an employee of a telephone company, occupants of a building or a news reporter in the employ of a newspaper or radio or television station, that a bomb or other explosive has been or will be placed or secreted in any public or private place, knowing that the report is false, is guilty of a crime punishable by imprisonment in a county jail not to exceed one year, or pursuant to subdivision (h) of Section 1170.

(b) Any person who reports to any other peace officer defined in Chapter 4.5 (commencing with Section 830) of Title 3 of Part 2 that a bomb or other explosive has been or will be placed or secreted in any public or private place, knowing that the report is false, is guilty of a crime punishable by imprisonment in a county jail not to exceed one year or pursuant to subdivision (h) of Section 1170 if (1) the false information is given while the peace officer is engaged in the performance of his or her duties as a peace officer and (2) the person providing the false information knows or should have known that the person receiving the information is a peace officer.

(c) Any person who maliciously informs any other person that a bomb or other explosive has been or will be placed or secreted in any public or private place, knowing that the information is false, is guilty of a crime punishable by imprisonment in a county jail not to exceed one year, or pursuant to subdivision (h) of Section 1170.

(d) Any person who maliciously gives, mails, sends, or causes to be sent any false or facsimile bomb to another person, or places, causes to be placed, or maliciously possesses any false or facsimile bomb, with the intent to cause another to fear for his or her personal safety or the safety of others, is guilty of a crime punishable by imprisonment in a county jail not to exceed one year, or pursuant to subdivision (h) of Section 1170.

(Amended by Stats. 2011, Ch. 15, Sec. 259. (AB 109) Effective April 4, 2011. Operative October 1, 2011, by Sec. 636 of Ch. 15, as amended by Stats. 2011, Ch. 39, Sec. 68.)

Appendix D: CA Penal Code Section 148.2

148.2. Every person who willfully commits any of the following acts at the burning of a building or at any other time and place where any fireman or firemen or emergency rescue personnel are discharging or attempting to discharge an official duty, is guilty of a misdemeanor:

1. Resists or interferes with the lawful efforts of any fireman or firemen or emergency rescue personnel in the discharge or attempt to discharge an official duty.
2. Disobeys the lawful orders of any fireman or public officer.
3. Engages in any disorderly conduct which delays or prevents a fire from being timely extinguished.
4. Forbids or prevents others from assisting in extinguishing a fire or exhorts another person, as to whom he has no legal right or obligation to protect or control, from assisting in extinguishing a fire.

(Amended by Stats. 1973, Ch. 471.)

Appendix E: CA Penal Code Section 402

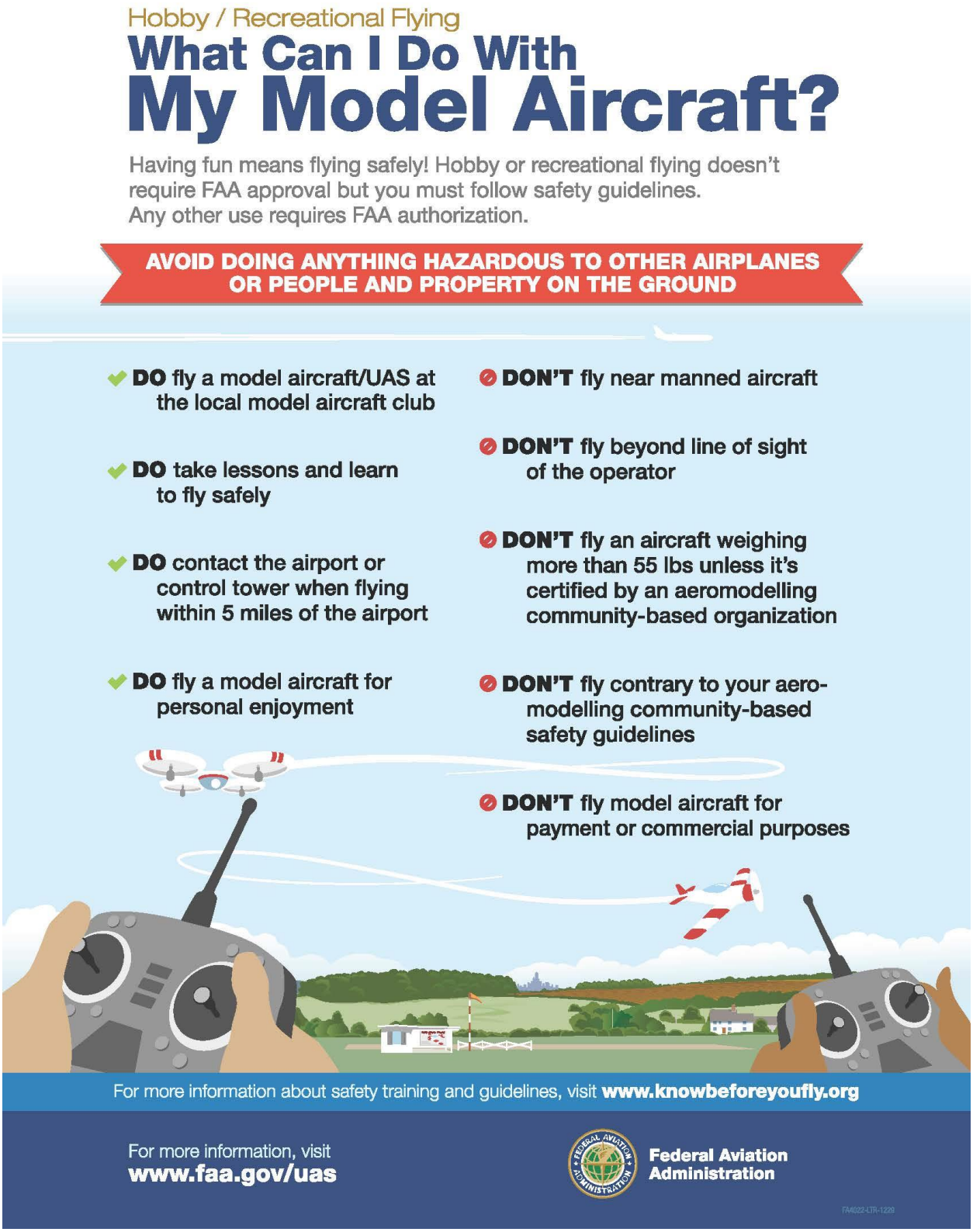
402. (a) Every person who goes to the scene of an emergency, or stops at the scene of an emergency, for the purpose of viewing the scene or the activities of police officers, firefighters, emergency medical, or other emergency personnel, or military personnel coping with the emergency in the course of their duties during the time it is necessary for emergency vehicles or those personnel to be at the scene of the emergency or to be moving to or from the scene of the emergency for the purpose of protecting lives or property, unless it is part of the duties of that person's employment to view that scene or activities, and thereby impedes police officers, firefighters, emergency medical, or other emergency personnel or military personnel, in the performance of their duties in coping with the emergency, is guilty of a misdemeanor.

(b) Every person who knowingly resists or interferes with the lawful efforts of a lifeguard in the discharge or attempted discharge of an official duty in an emergency situation, when the person knows or reasonably should know that the lifeguard is engaged in the performance of his or her official duty, is guilty of a misdemeanor.

(c) For the purposes of this section, an emergency includes a condition or situation involving injury to persons, damage to property, or peril to the safety of persons or property, which results from a fire, an explosion, an airplane crash, flooding, windstorm damage, a railroad accident, a traffic accident, a power plant accident, a toxic chemical or biological spill, or any other natural or human-caused event.

(Amended by Stats. 1989, Ch. 214, Sec. 1.)

Appendix F: Model Aircraft Guidelines



Appendix G: Academy of Model Aeronautics National Model Aircraft Safety Code

Effective January 1, 2014

A. **GENERAL**: A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.

1. Model aircraft will not be flown:

(a) In a careless or reckless manner.

(b) At a location where model aircraft activities are prohibited.

2. Model aircraft pilots will:

(a) Yield the right of way to all human-carrying aircraft.

(b) See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D.)

(c) Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport without notifying the airport operator.

(d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.

(e) Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Airplane program. (AMA Document 520-A.)

(f) Ensure the aircraft is identified with the name and address or AMA number of the owner on the inside or affixed to the outside of the model aircraft. (This does not apply to model aircraft flown indoors.)

(g) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.

(h) Not operate model aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot's ability to safely control the model.

(i) Not operate model 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.

Exceptions:

- Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight.
- Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code but may not be launched from model aircraft.
- Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document. (AMA Document #718.)

(j) Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A.)

3. Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstrations unless:

(a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.

(b) An inexperienced pilot is assisted by an experienced pilot.

4. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. **RADIO CONTROL (RC)**

1. All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.

2. A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.

3. At all flying sites a safety line(s) must be established in front of which all flying takes place. (AMA Document #706.)
(a) Only personnel associated with flying the model aircraft 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.
4. RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
5. RC model aircraft will not knowingly operate within three (3) miles of any pre-existing flying site without a frequency-management agreement. (AMA Documents #922 and #923.)
6. With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flightline.
7. Under no circumstances may a pilot or other person touch an outdoor model aircraft in flight while it is still under power, except to divert it from striking an individual.
8. RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.
9. The pilot of an RC model aircraft shall:
(a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.
(b) Fly using the assistance of a camera or First-Person View (FPV) only in accordance with the procedures outlined in AMA Document #550.
(c) Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560.

C. **FREE FLIGHT**

1. Must be at least 100 feet downwind of spectators and automobile parking when the model aircraft is launched.
2. Launch area must be clear of all individuals except mechanics, officials, and other fliers.
3. An effective device will be used to extinguish any fuse on the model aircraft after the fuse has completed its function.

D. **CONTROL LINE**

1. The complete control system (including the safety thong where applicable) must have an inspection and pull test prior to flying.
2. The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category.
3. Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.
4. The flying area must be clear of utility wires or poles and a model aircraft will not be flown closer than 50 feet to any above-ground electric utility lines.
5. The flying area must be clear of all nonessential participants and spectators before the engine is started.