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PREPARED AND UPDATED BY
DIANE C. THORNTON
RESEARCH DIVISION
LEGISLATIVE COUNSEL BUREAU

RESEARCH BRIEF ON

UNMANNED AIRCRAFT VEHICLES

BACKGROUND

Unmanned aircraft vehicles (UAVs) were first developed for military use. With advances in technology, today, UAVs are used in various applications, including search and rescue, land surveillance, and law enforcement. The Federal Aviation Administration (FAA) Modernization and Reform Act of 2012 (FMRA) directed the FAA to develop a comprehensive plan for the "safe integration" of commercial UAVs into national airspace. On February 15, 2015, the FAA issued its proposed regulations for flying small UAVs.

Commercial use of UAVs is expected to expand into many areas including: (1) cargo transportation; (2) commercial photography; (3) farming; (4) filming television and movies; (5) infrastructure monitoring; (6) live event coverage; and (7) security awareness. The FAA estimates there were 1.6 million sales of small unmanned aircraft, many purchased for use as model aircraft.

IT'S A DRONE, RIGHT?

The FAA uses the term unmanned aircraft system (UAS); however, Nevada law refers to such vehicles as UAVs. As happens with any new technology, UAVs have had many names, including: (1) drone; (2) remotely operated aircraft; (3) remotely piloted aircraft; (4) remotely piloted vehicle system; (5) unmanned aerial vehicle; and (6) unmanned aircraft system.

FEDERAL AVIATION ADMINISTRATION POLICY

The FAA separates UAVs into three categories:

1. *Model Aircraft*—The operating standards for model aircraft, which are flown for hobby or recreational purposes, are outlined by FAA Advisory Circular (AC) 91-57. Generally, these aircraft are limited in their use near spectators, operate less than 400 feet above ground, and must give right-of-way to manned aircraft.

   In 2007, the FAA clarified the AC 91-57 guidelines and specifically excluded the use of model aircraft by persons or companies for business purposes. Then in 2012, the FMRA further defined model aircraft as "an unmanned aircraft" that is: (1) capable of sustained flight in the atmosphere; (2) flown within visual line of sight of the person operating the aircraft; and (3) flown for hobby or recreational purposes.

2. *Civil Aircraft*—Unmanned aircraft that do not meet the definition of model aircraft are subject to FAA regulations. The civil use of a UAV requires an experimental airworthiness certificate from the FAA. This is the only way a civil operator can fly UAVs to do research and development, training, and flight demonstrations.

3. *Public Aircraft*—The operator of a public UAV must obtain a Certificate of Authorization from the FAA. Common uses of public UAVs include: (1) border and port surveillance by the United States Department of Homeland Security; (2) disaster relief; (3) firefighting; (4) law enforcement; and (5) search and rescue.

FAA REGISTRATION OF UAV

In response to the rapid increase of sales and of unsafe and unauthorized use of unmanned aircraft, the FAA issued regulations requiring, as of December 21, 2015, the registration of UAVs weighing between 0.55 pounds and 55 pounds on takeoff that are flown outdoors in the national airspace. Failure to register a UAV can result in civil penalties up to $27,500. Criminal penalties can include fines of up to $250,000 under 18 U.S.C. 3571 and/or imprisonment for up to three years.

UAV IN THE UNITED STATES

With introduction of UAVs into national airspace, use of UAVs by law enforcement or for commercial or private purposes raises many legal and policy questions. Given the surveillance capabilities of UAVs and the ease with which an operator can fly a UAV into uninvited space, there is concern about how to address issues of safety, privacy, and civil liberties.

The authority of the FAA preempts state or local governments from enacting laws or regulations concerning national airspace. For example, a state law prohibiting the operation of an aircraft or setting restrictions on flight altitude would generally be preempted. However, state and local governments do have authority to limit the use of certain aircraft, such as UAVs, by state agencies or state law enforcement. In 2015, 45 states had either proposed or enacted UAV laws in order to accomplish one or more of the following goals: (1) address privacy issues; (2) ban weaponization; (3) define legal and illegal uses of UAVs; (4) define UAV; and (5) enact procedures for law enforcement or other public agencies to follow when using UAVs.

UAV IN NEVADA

The FMRA directs the FAA to establish a program that will integrate UAVs into the national airspace system at six test ranges. In selecting the six test site operators, the FAA considered airspace use, aviation experience, climate, geography, location of ground infrastructure, research needs, risk, and safety. Together, the six test sites achieve countrywide geographic and climatic diversity and will help the FAA develop regulatory standards and operational procedures to foster UAV technology. Nevada was chosen to take part along with Alaska, New York, North Dakota, Texas, and Virginia. On June 9, 2014, the FAA announced that the UAV test site in Nevada was operational and ready to conduct flights. The following Nevada airports have been named as potential UAV testing sites:

- Creech Air Force Base, Southern Nevada;
- Desert Rock Airport (U.S. Department of Energy operated), Southern Nevada;
- Hawthorne Army Depot, Hawthorne, Nevada;
- Naval Air Station Fallon, Fallon, Nevada;
- Nellis Air Force Base, Southern Nevada;
- Nevada National Security Site, Southern Nevada; and
- Reno-Stead Airport, Northern Nevada.

According to the FAA website (http://www.faa.gov/uas/legislative_programs/test_sites/):

> Nevada's project objectives concentrate on UAS standards and operations as well as operator standards and certification requirements. The applicant's research will also include a concentrated look at how air traffic control procedures will evolve with the introduction of UAS into the civil environment and how these aircraft will be integrated with NextGen UAS.

OTHER SOURCES

- Federal Aviation Administration: Unmanned Aircraft Systems
  http://www.faa.gov/uas/
- Know Before You Fly
  http://knowbeforeyoufly.org/
- Nevada Institute for Autonomous Systems
  400 South 4th Street, Suite 500
  Las Vegas, Nevada 89101
  (702) 793-4218
  http://www.nias-uas.com