

# Overview of the Unmanned Aircraft Systems Industry

Tom McMahon

Vice President, Advocacy and Public Affairs

Association for Unmanned Vehicle Systems International



# About AUVSI

**AUVSI's mission is to advance the unmanned systems and robotics community through education, advocacy and leadership.**

**AUVSI's vision is to improve humanity by enabling the global use of robotic technology in everyday lives.**

- In its 43<sup>rd</sup> year, AUVSI is the ***world's largest non-profit association*** devoted exclusively to unmanned systems and robotics
  - Air, Ground and Maritime
  - Defense, Civil and Commercial
- AUVSI represents more than ***7,500 members***, including ***more than 600 corporate members*** from more than ***60 countries***
- ***Diverse membership*** from industry, government and academia



# AUVSI Advocacy

- AUVSI advocates for the interests of the entire unmanned systems community with Members of Congress, the FAA, and other stakeholders
- **House Unmanned Systems Caucus**, Co-chaired by Reps. Heck (R-NV) and Lipinski (D-IL); it has more than 50 members.
- **Senate Unmanned Aerial System Caucus**, Co-chaired by Sens. Inhofe (R-OK) and Manchin (D-WV); it has 7 members
- **Congressional Robotics Caucus**, Co-chaired by Reps. Woodall (R-GA) and Doyle (D-PA); it has 25 members
- AUVSI regularly informs Members of Congress and Staff by participating in hearings and events on Capitol Hill.
- AUVSI works with other US federal agencies, including FAA, NTIA, DHS, DOJ, DOD and NASA.



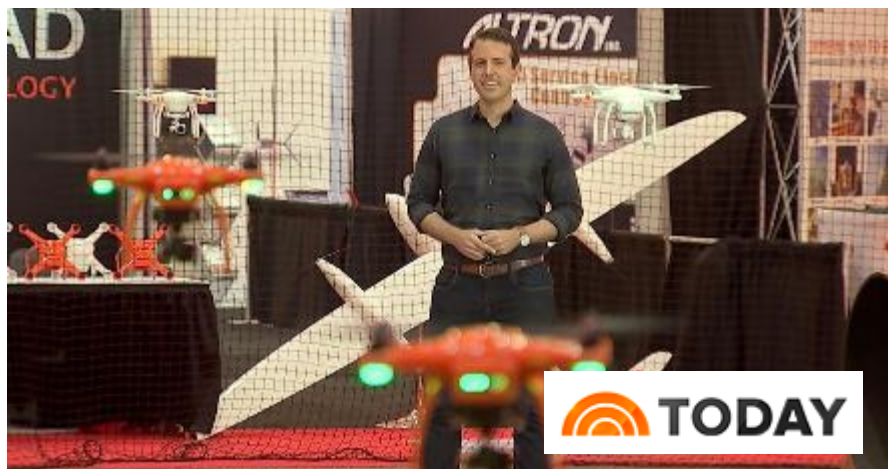
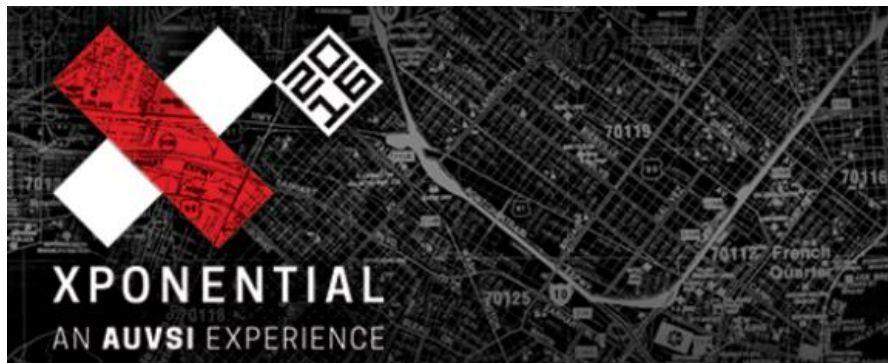
# AUVSI Chapters

- **AUVSI has more than 30 Chapters across the U.S., and others in the UK, Spain, Israel and China**
- **Many chapters have hosted events that include information on non-military uses for UAS**
- **Precision Agriculture**
  - Cascade Chapter (Oregon and Washington)
  - USA-OK Chapter (Oklahoma)
  - Atlanta Chapter (Georgia)
  - Pathfinder Chapter (Alabama)
- **First Responders/Law Enforcement/Search and Rescue**
  - Cascade Chapter (Oregon and Washington)
  - Lone Star Chapter (Texas)
- **Commercial/Consumer Robotics**
  - Silicon Valley Chapter (N. California)
  - Twin Cities Chapter (Minnesota)
  - Mountain West (Utah and Idaho)





# AUVSI Events



# UAS Economic Impact



# Unmanned Systems Potential Applications



Border Security

Arctic Research

Firefighting

Flood Monitoring

Crop Dusting

Mining

Farming

Aerial Photography

Real-estate

Communications

Industrial Logistics

Pollution Monitoring

Storm Research

HAZMAT Detection

Asset Monitoring

Event Security

Port Security

Construction

Cargo

Broadcasting

Search & Rescue

Volcanic Research

Pipeline Monitoring

Filmmaking

Crowd Control

Aerial News Coverage

Wildlife Monitoring

Forensic Photography

Power line Surveying

Damage Assessment

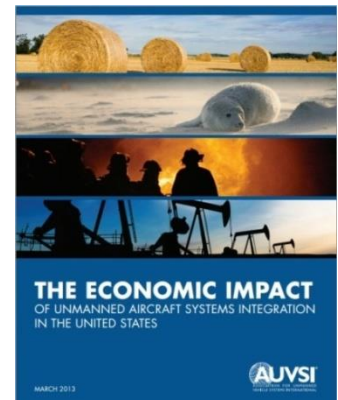




# UAS Economic Potential

## AUVSI's Economic Report:

- The UAS **global market** is currently **\$11.3 billion**
- Over the next 10 years, the UAS **global market** will total **\$140 billion**
- The economic impact of US airspace integration will total over **\$13.6 billion** in the first three years and will grow sustainably for the foreseeable future, cumulating to over **\$82.1 billion** between 2015 and 2025
- Every year that airspace integration is delayed will cost the U.S. over **\$10 billion** in lost potential economic impact, which translates to **\$27 million** per day





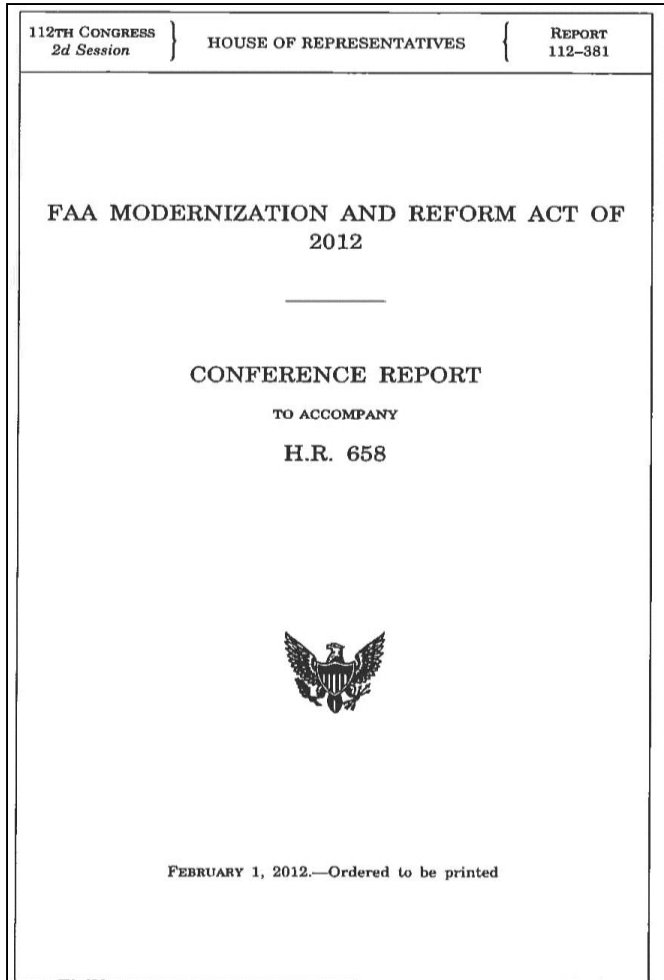
# UAS Industry in Utah

- According to AUVSI's Economic Impact Report, the UAS industry will add almost
- \$859 million and 1,085 jobs to Utah's economy in the first decade following integration
- Among the first 3,000 commercial UAS exemptions, Utah received 27 approved operators, supporting industries such as real estate, construction and agriculture



# Permission to Fly

# 2012 FAA Act



- After 5 years, and 23 extensions, Congress passed the FAA Modernization and Reform Act in February 2012
- For the first time ever, Congress included language requiring the FAA to safely integrate UAS into the national airspace
- The bill created a number of deadlines for the FAA to meet on their way to the safe integration of UAS by Sept. 30, 2015
- The FAA currently authorizes the use of UAS for commercial or business purposes on a case-by-case basis under Section 333 of the 2012 Act

# FAA Exemptions

**The FAA announced it was working to expedite limited commercial operations of UAS for specific low-risk applications**

- As of May 9, 2016, the FAA has granted nearly 5,200 exemptions to organizations and companies
- Interim policy granting a COA for flights at or below 400 ft. to any UAS operator with a 333 exemption for aircraft that weigh less than 55 lbs., operate during daytime visual flight rules (VFR) conditions, within visual line of sight, and stay certain distances away from airports or heliports
- The FAA has also announced a summary grant process to use when it finds it has already granted a previous exemption similar to a new request





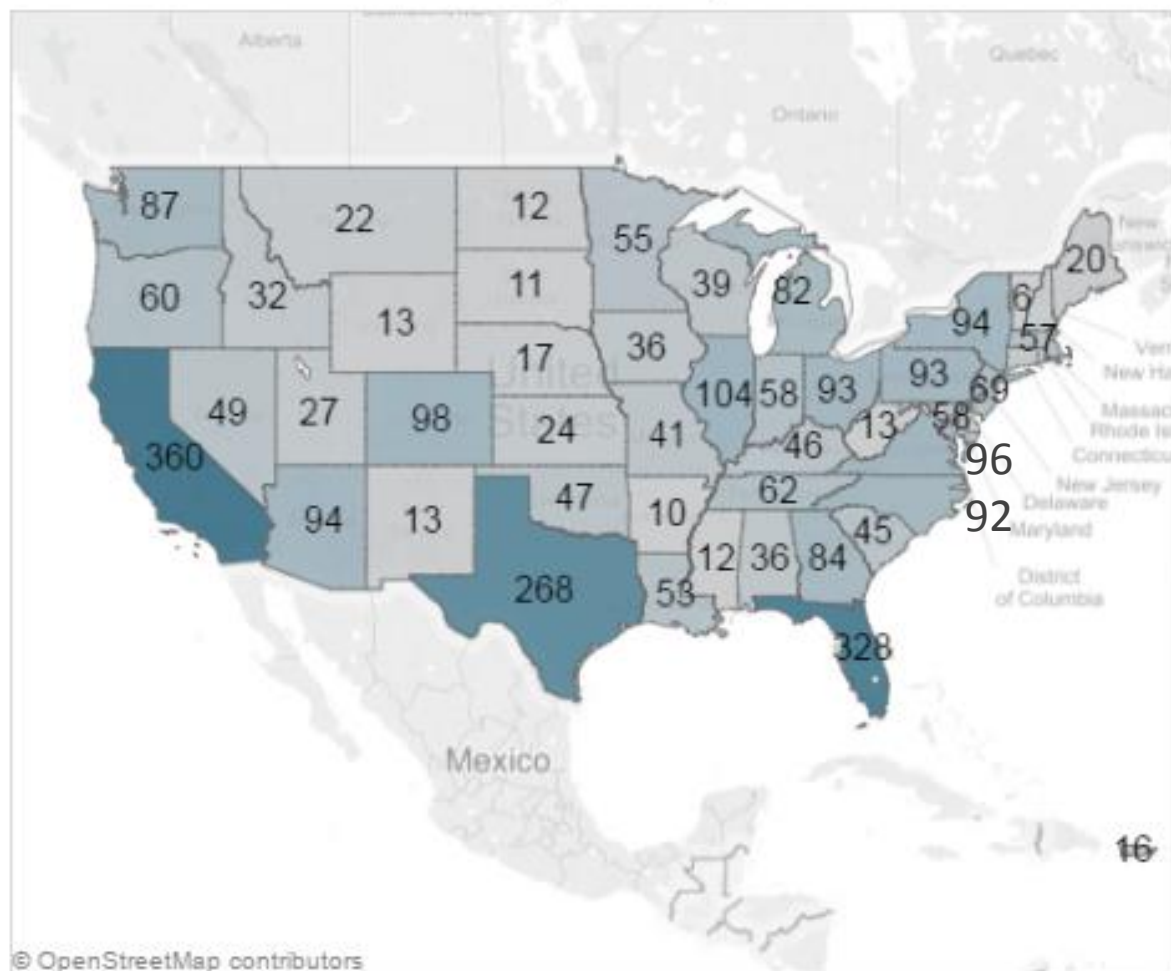
# Exemption Report

**The Association for Unmanned Vehicle Systems International (AUVSI) examined the first 3,000 FAA-approved petitions for Sec. 333 exemptions**

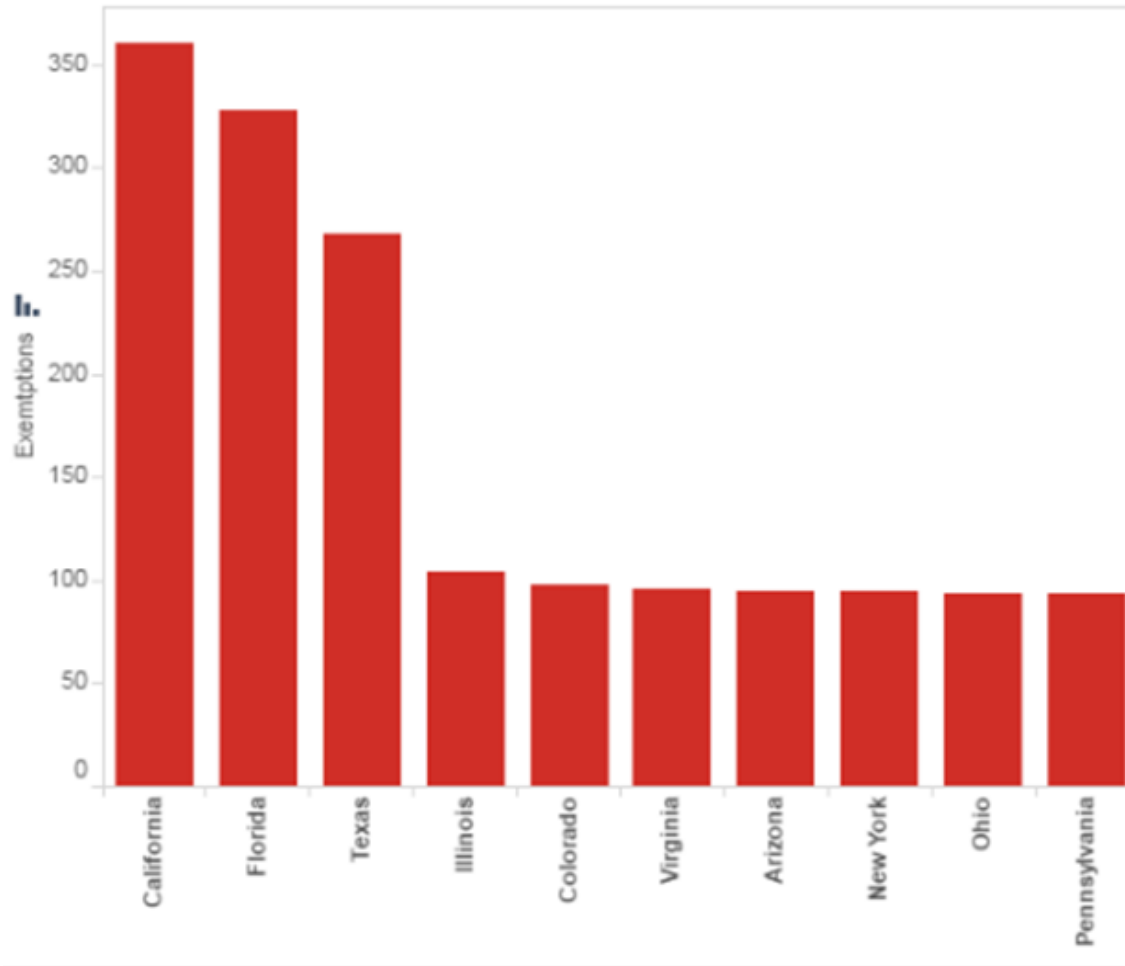
- Nearly 40 different types of business operations have received FAA exemptions to operate UAS commercially in the U.S. national airspace:
  - Aerial Photography (2,557)
  - Real Estate (1,969)
  - Aerial Inspection (1,671)
- Exemptions were approved for operators in 50 states and Puerto Rico.
- Most commercial UAS operators are small businesses. About 90% generate less than \$1 million in annual revenue and have fewer than 10 employees.
- About 65% of all platforms mentioned in the exemptions are manufactured by DJI Global.
- Rotary-wing platforms are used about six times more than fixed wing platforms.



# UAS Exemptions



# Top 10 States for UAS Exemptions



## UAS Exemptions by Month

**Exemptions**

**27**

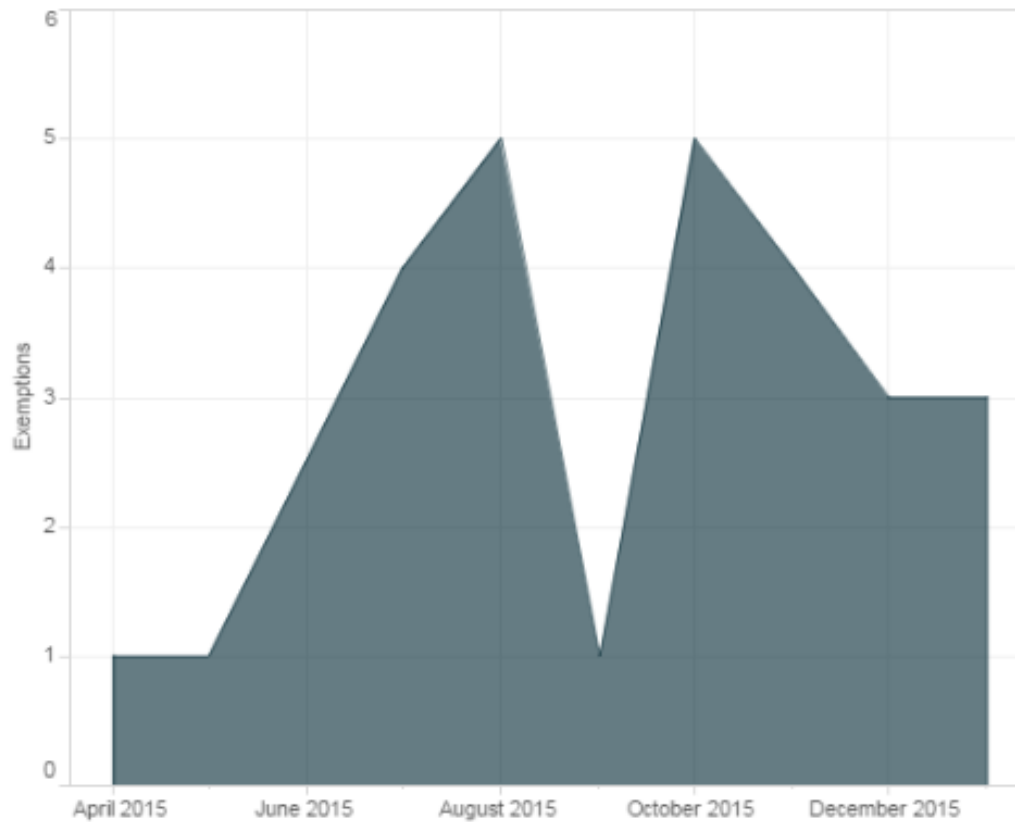
Location

Utah

Application(s)

(All)

### UAS Exemptions by Month





## Business Analysis

**Companies**  
**27**

Location

Utah

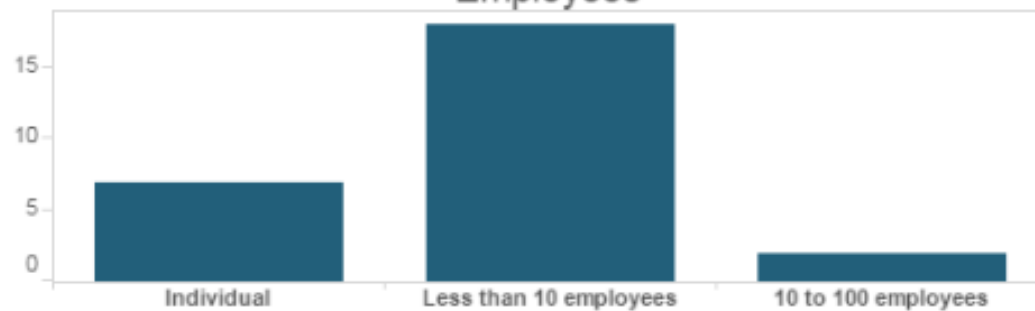
Application

(All)

### Company Revenue



### Employees



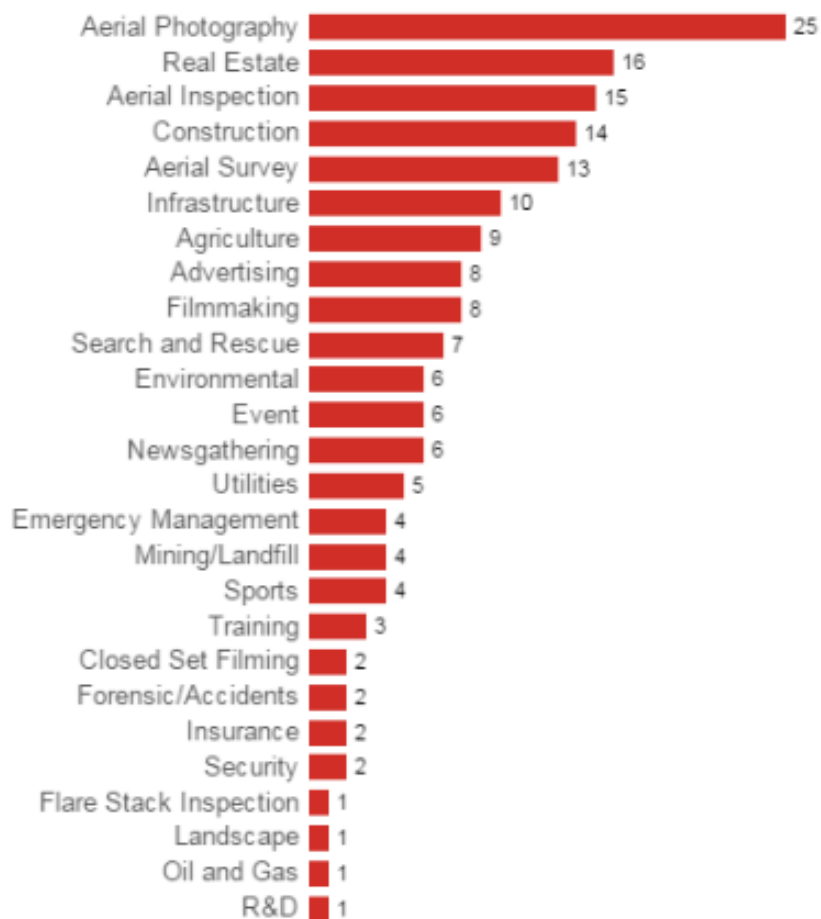
## Applications

Exemptions

27

Location

Utah



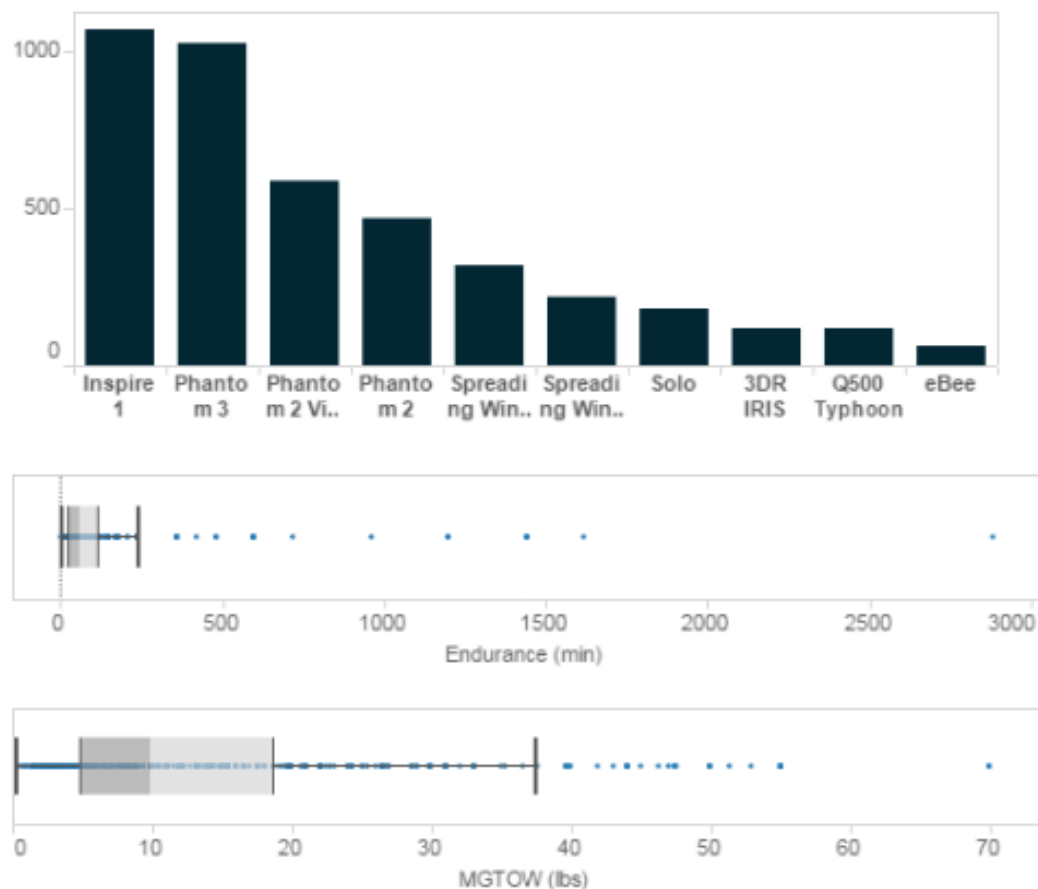
## Platform Data

Exemptions

2,557

Application(s)

Aerial Photography



# Small UAS NPRM

**In 2015, the FAA took a critical step in advancing the integration process with the release of its Notice of Proposed Rulemaking for small, unmanned systems.**

- Good first step in an evolutionary process to realizing the many societal and economic benefits of UAS
- The proposed rule would allow systems to be used as long as they fly under 400 feet, remain in the operator's line of sight and fly only during daylight
- Will continue to work with the FAA to allow the broadest possible commercial use of unmanned aircraft while continuing to ensure the safety of the airspace for all aircraft — manned and unmanned
- Final rule expected late spring 2016



## FEDERAL REGISTER

Vol. 80

Monday,

No. 35

February 23, 2015

Part III

Department of Transportation

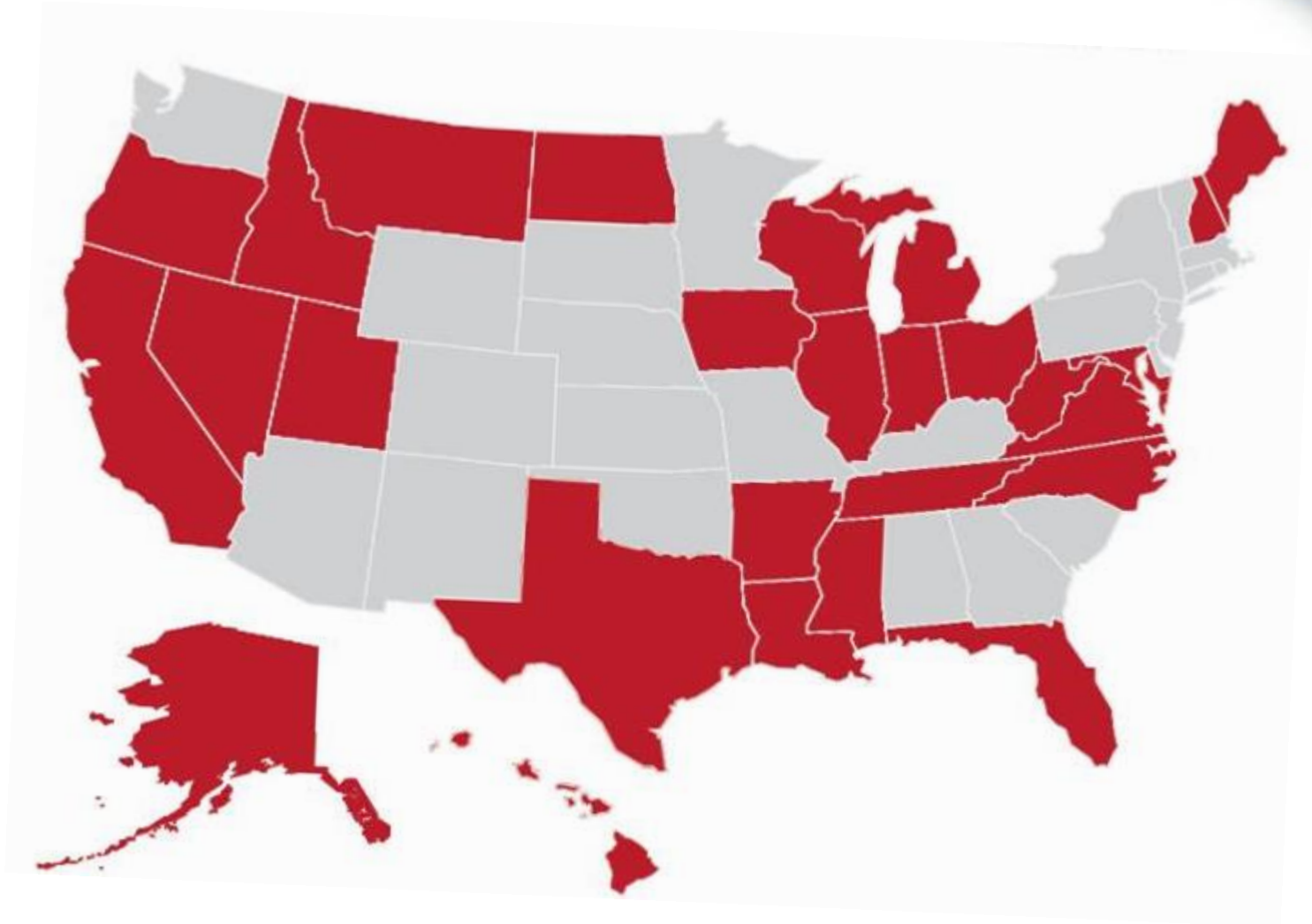
Federal Aviation Administration

14 CFR Parts 21, 43, 45, et al.

Operation and Certification of Small Unmanned Aircraft Systems; Proposed Rule



# State UAS Laws



# FAA UAS Fact Sheet

## Federal Jurisdiction

- Regulate Airspace
  - Altitude
  - Flight Paths
- Operations Bans
  - City Limits
  - City Airspace
  - Distance from Landmarks
- Mandate Equipment and Training
  - Geofencing
  - Knowledge Test

## State/Local Jurisdiction

- State/Local Police Powers
  - Land Use
  - Zoning
  - Privacy
  - Trespassing
  - Voyeurism
- Require Warrants for Law Enforcement Surveillance
- Prohibit for Fishing and Hunting
- Prohibit Mounting Weapons and Firearms

# DRAFT: Voluntary Best Practices for UAS Privacy, Transparency and Accountability

- Inform Others of Your Use of UAS
- Show Care When Operating UAS or Collecting And Storing Covered Data
- Limit the Use and Sharing of Covered Data
- Secure Covered Data
- Monitor and Comply with Evolving Federal, State, and Local UAS Laws



**National  
Telecommunications  
and Information  
Administration**

## AUVSI Policy Priorities

- ✓ **Implement a “Risk-Based, Technology Neutral” Regulatory Framework**
- ✓ **Expand Section 333 Exemption Authority to Include Beyond-Line-of-Sight**
- ✓ **Develop a Holistic R&D Plan for UAS Integration**
- ✓ **Make FAA-Designated UAS Test Sites Eligible for Federal Funding**
- ✓ **Advance the Development of a UAS Traffic Management System**
- ✓ **Elevate UAS Integration into the National Airspace System as a national priority**



# Creating a Culture of Aviators

# Know Before You Fly Campaign

- Education campaign to teach prospective UAS users how to fly responsibly
  - Partnered with Academy of Model Aeronautics and FAA
- Website [www.knowbeforeyoufly.org](http://www.knowbeforeyoufly.org) provides recreational, commercial, and public entities with information and guidance to fly safely and responsibly.
- Working with manufacturers and distributors to include pamphlets in UAS product packaging and at the point of sale

**DID YOU KNOW?**

A stylized illustration of a stadium with a circular field and tiered seating, rendered in shades of blue and white.

**Unmanned aircraft must follow temporary flight restrictions around stadiums and racetracks.**

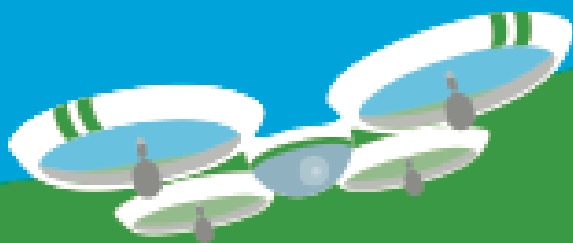
*Click here to learn more.*



**Federal Aviation  
Administration**



# FLYING SAFELY



## Recreational or commercial use?

Using a drone in connection with a business is considered to be commercial use by the FAA. This includes but is not limited to:

- Real estate, wedding or other photography
- Inspection or survey services
- Film or television production

Visit [faa.gov/uas](http://faa.gov/uas) for more information

Go to [knowbeforeyoufly.org](http://knowbeforeyoufly.org) to stay up to date on how and when you can fly your drone.

## Know your surroundings

Some municipalities prohibit the operation of remote controlled aircraft within public spaces such as parks and school grounds. There are rules of the air you need to know. Always check with local authorities before you fly your drone.



If you own a drone, register your drone  
[registermyuas.faa.gov](http://registermyuas.faa.gov)



Fly below 400 feet



Avoid flying over groups of people and stadium events



Never fly near other aircraft or airports



Keep well away from emergency response efforts such as fires



Fly within visual line of sight



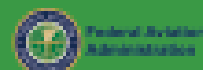
Avoid flying near other aircraft



Be aware of FAA airspace requirements  
[faa.gov/go/uastfr](http://faa.gov/go/uastfr)



Do not fly under the influence





# KNOW *FLY* BEFORE YOU SUPPORTERS

Over 80  
Supporters

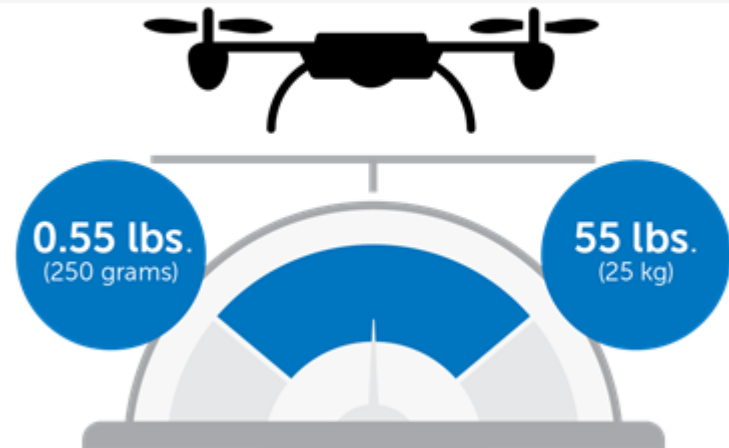


# sUAS Registration Service

**An efficient process for sUAS registration should lead to increased accountability across the entire aviation community**

- Existing registration requirement for commercial operators – extending to consumer users helps promote responsibility and safety
- Industry-Government collaboration led to quick policy development – similar urgency needed for more complex issues, such as BVLOS and UTM
- 425,000 registrations as of May 2016
- 400,000 page views to Know Before You Fly website since UAS Registration Task Force recommendations announced

Do I need to Register My Drone?





# Thanks for the Work You Are Doing!

AUVSI  
[www.auvsi.org](http://www.auvsi.org)