

Unmanned Aircraft Systems (UAS)

Update

**Presented to: Alabama Airport Conference and
Alabama Aviation Council**

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FAA Southern Region**

Date: September 23, 2014



**Federal Aviation
Administration**



FAA Vision for UAS Integration

**Safe, efficient, and
timely integration of
UAS into the
airspace**

- **Safe**
 - Because safety is the FAA's primary mission
- **Efficient**
 - FAA is committed to reduce delays and increase system reliability
- **Timely**
 - FAA is dedicated to supporting this exciting new technology

Getting to Integration

Today

- Accommodation

Mid-term

- Transition to NAS Integration

Long-term

- Integration into the NextGen NAS

Economic Impact Estimated at \$82B with over 100,000 Jobs Created – AUVSI, 2013

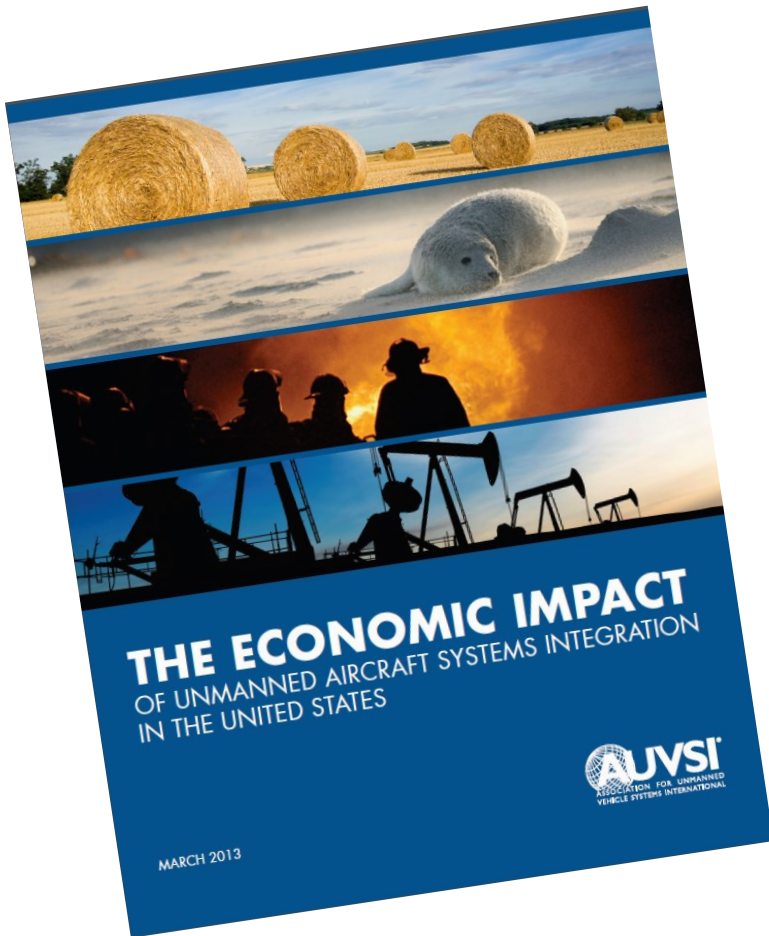


Table 1: Total Economic Impact of UAS Integration in the United States

State	2015-2017			2015-2025		
	Economic Impact (\$M)	Taxes (\$M)	Jobs Created	Economic Impact (\$M)	Taxes (\$M)	Jobs Created
Alabama	\$294	\$2.43		\$14.60		
Alaska	\$19	\$0.00	1,310	\$122	\$0.00	2,251
Arizona	\$461	\$1.59	90	\$8,371	\$18.55	141
California	\$80	\$0.94	2,883	\$14,372	\$5.63	4,260
Colorado	\$230	\$12.64	411	\$1,392	\$62.03	12,161
Connecticut	\$232	\$1.79	12,292	\$5,232	\$10.79	1,760
Delaware	\$538	\$1.79	12,292	\$1,029	\$0.97	4,058
Florida	\$17	\$4.52	1,191	\$1,802	\$0.00	131
Georgia	\$632	\$0.76	7,764	\$2,279	\$23.34	4,800
Hawaii	\$379	\$0.00	68	\$194	\$0.00	2,800
Idaho	\$2	\$5.72	3,251	\$174	\$2.35	345
Illinois	\$19	\$0.39	1,943	\$1,216	\$1.30	220
Iowa	\$204	\$0.36	166	\$956	\$1.22	1,849
Kansas	\$208	\$1.71	149	\$1,941	\$5.53	1,573
Kentucky	\$159	\$1.18	1,049	\$641	\$29.13	1,206
Louisiana	\$489	\$0.92	1,067	\$1,282	\$5.41	3,716
Louisiana	\$489	\$4.94	827	\$641	\$6.67	676
Maine	\$89	\$0.00	2,812	\$1,017	\$7.56	1,620
Maryland	\$113	\$1.44	459	\$2,321	\$15.83	810
Massachusetts	\$385	\$1.26	1,097	\$2,022	\$20.22	2,549
Michigan	\$388	\$2.64	540	\$633	\$10.08	1,426
Minnesota	\$182	\$3.56	1,723	\$1,568	\$6.40	1,076
Mississippi	\$142	\$1.37	1,063	\$1,582	\$2.66	441
Missouri	\$162	\$1.68	963	\$1,582	\$4.41	1,999
Montana	\$260	\$1.30	780	\$1,582	\$18.05	3,363
Nebraska	\$14	\$1.73	832	\$1,582	\$0.40	1,160
Nevada	\$14	\$0.15	1,333	\$1,582	\$14.00	105
New Hampshire	\$38	\$0.22	74	\$486	\$5.61	823
New Jersey	\$85	\$0.00	123	\$1,582	\$13.12	614
New Mexico	\$263	\$0.00	190	\$1,582	\$12.28	2,985
New York	\$101	\$3.24	499	\$1,582	\$6.99	320
North Carolina	\$443	\$0.73	1,355	\$1,582	\$0.00	749
North Dakota	\$13	\$4.66	518	\$1,582	\$0.00	71
Ohio	\$14	\$1.79	2,376	\$1,582	\$10.75	3,363
Oklahoma	\$350	\$0.07	780	\$1,582	\$0.00	105
Oregon	\$106	\$2.43	71	\$1,582	\$14.00	105
Pennsylvania	\$81	\$0.93	1,844	\$1,582	\$5.61	823
Rhode Island	\$393	\$0.41	645	\$1,582	\$13.12	614
South Carolina	\$42	\$1.02	436	\$1,582	\$12.28	2,985
South Dakota	\$99	\$0.38	2,021	\$1,582	\$0.00	71
Tennessee	\$99	\$1.38	217	\$1,582	\$0.00	71
Texas	\$12	\$0.00	507	\$1,582	\$0.00	71
Utah	\$1,087	\$0.00	43	\$1,582	\$0.00	71
Vermont	\$43	\$0.00	575	\$1,582	\$0.00	71
Virginia	\$36	\$2.21	5,025	\$1,582	\$0.00	71
Washington	\$463	\$0.47	735	\$1,582	\$0.00	71
West Virginia	\$322	\$4.49	154	\$1,582	\$0.00	71
Wisconsin	\$47	\$0.00	2,380	\$1,582	\$0.00	71
Wyoming	\$68	\$0.43	6,746	\$1,582	\$0.00	71
WYOMING	\$5	\$0.06	240	\$1,582	\$0.00	71
WYOMING	\$5	\$0.00	430	\$1,582	\$0.00	71
Total	\$13,657	\$63.22	78,240	\$82,124	\$487.39	103,775

Who is Operating UAS in the National Airspace System (NAS)?*

Public (Governmental) Use Aircraft – via Certificate of Waiver or Authorization (COA)

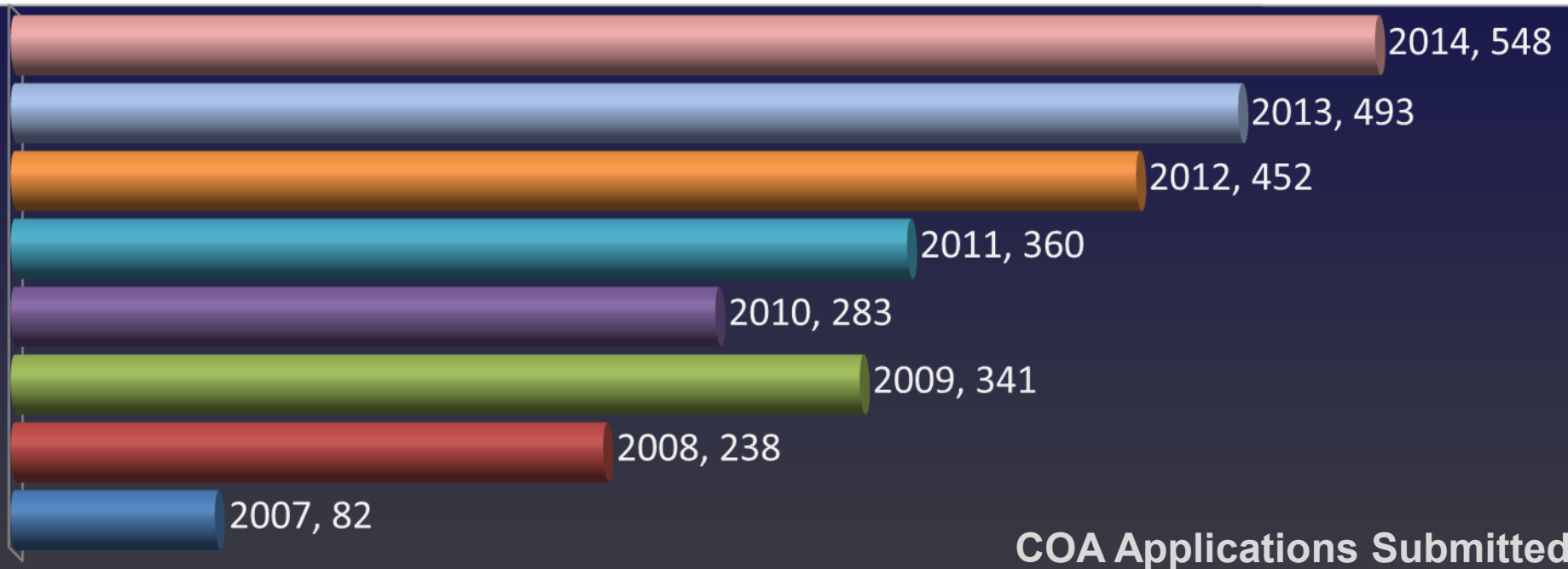
- Department of Agriculture
- Department of Commerce
- Department of Defense
- Department of Energy
- Department of Homeland Security
- Department of Interior
- Department of Justice
- NASA
- State Universities
- Federal/State/Local Law Enforcement

Civil Aircraft – via Special Airworthiness Certificates in the Experimental Category and Special Flight Permits

- Insitu
- Aerovironment
- Raytheon
- AAI Corporation
- General Atomics
- Boeing
- Others

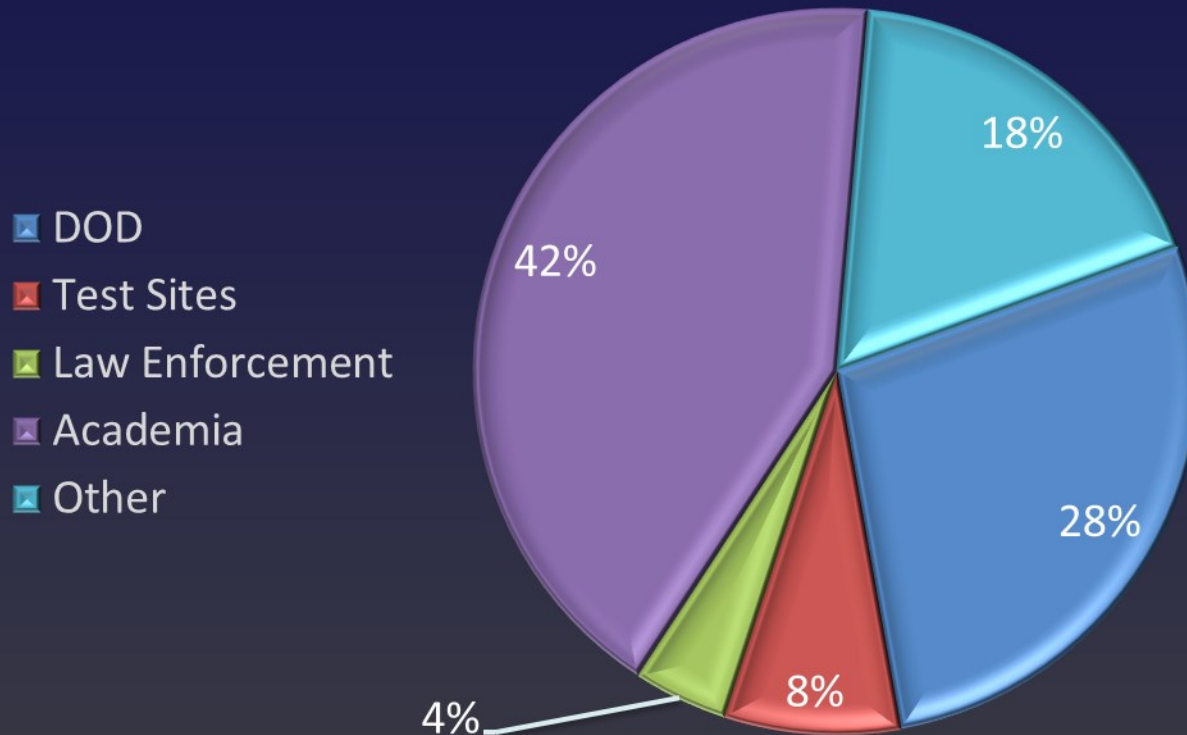
* *FAA has approved limited small UAS commercial operations in Arctic*

Applications Submitted



All data as of 8/25/2014

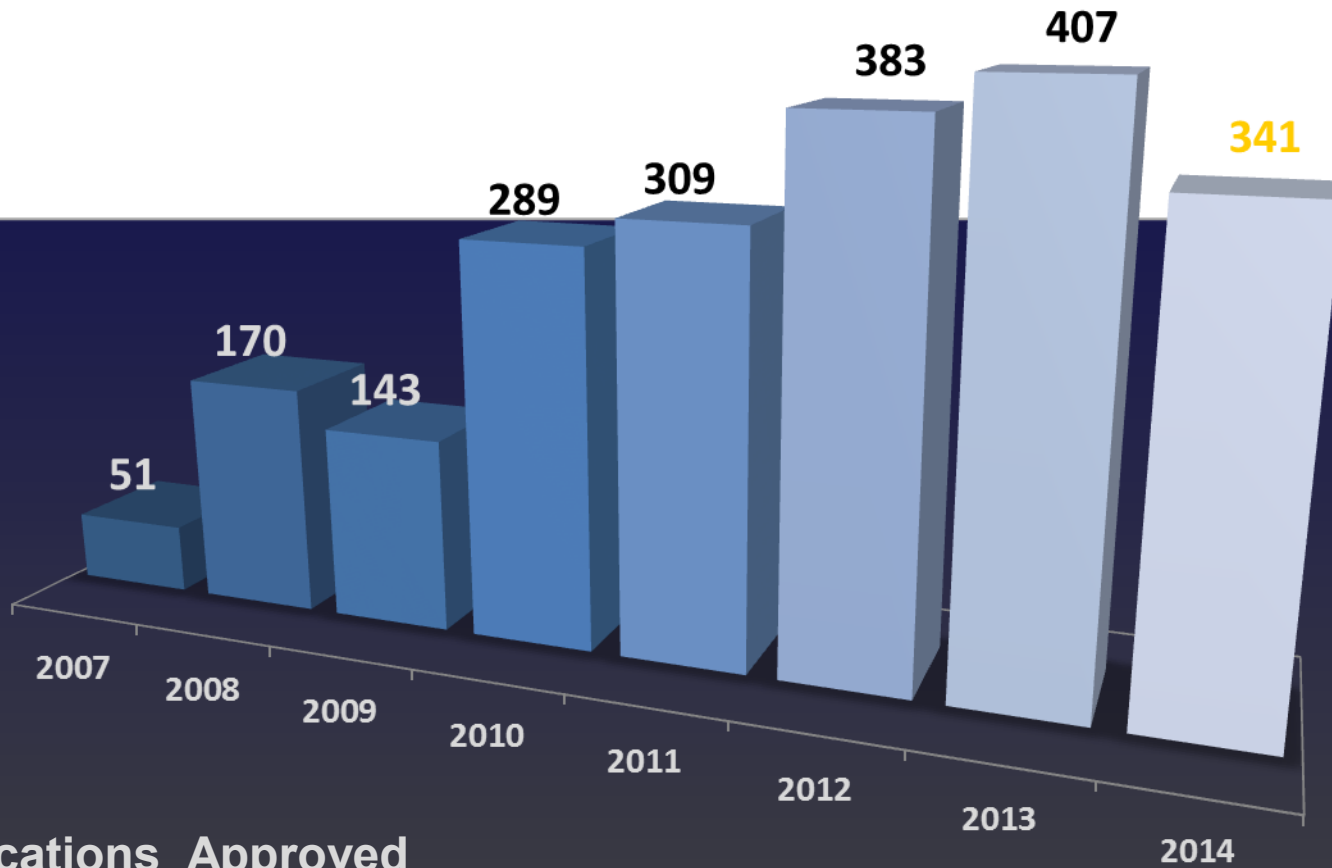
Proponent Breakdown



COA Applications Submitted by Proponent CY14

All data as of 8/25/2014

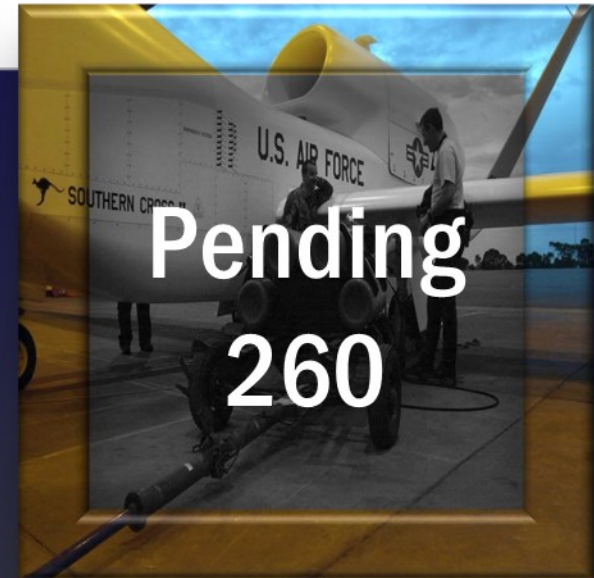
Applications Approved



All data as of 8/25/2014



Current Authorizations



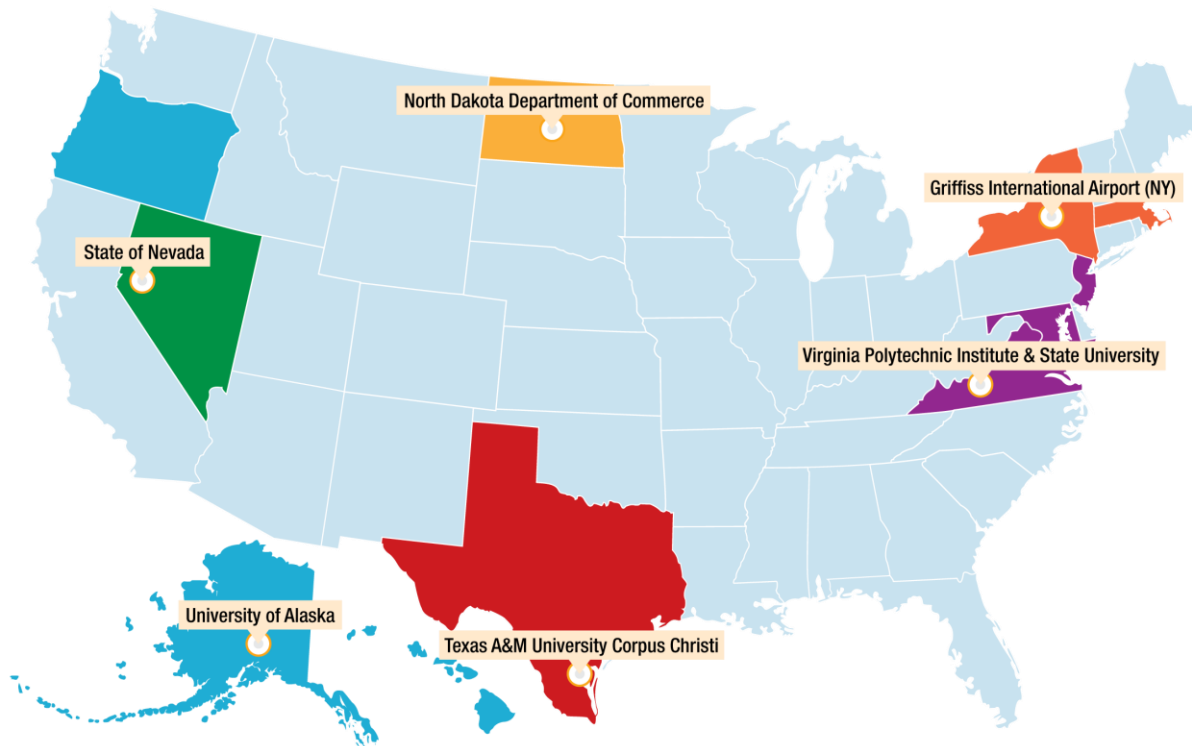
Current Authorizations

All data as of 8/25/2014

Test Site Timeline

- **February 14, 2013: Solicitation for proposals from public entities**
 - Received 25 applications from 24 states
- **November 2013: Test site privacy requirements published**
- **December 30, 2013: Test sites awarded**
- **June 28, 2014: First test site must be up and running**
 - All six test sites are currently operational as of August 13
- **February 13, 2017: Test sites operations may conclude**
- **June 2017: Final report due to Congress within 90 days of the test site program conclusion**

UAS Test Sites



- **University of Alaska**
 - Includes test ranges in Hawaii and Oregon
 - Operational May 5, 2014
- **State of Nevada**
 - Operational June 9, 2014
- **New York Griffiss International Airport**
 - Includes test ranges in Massachusetts
 - Operational August 7, 2014
- **North Dakota Department of Commerce**
 - Operational April 21, 2014
- **Texas A&M University – Corpus Christi**
 - Operational June 20, 2014
- **Virginia Polytechnic Institute and State University (Virginia Tech)**
 - Includes test ranges in New Jersey (partnered with Rutgers University) and Maryland
 - Operational August 13, 2014

Potential Areas for Section 333



FILMING | POWER LINE INSPECTION | PRECISION AGRICULTURE | FLARE STACK INSPECTION



Section 333 Benefits and Potential Areas

- **May be able to move forward with incremental UAS integration for specific, limited, low-risk uses in advance of small UAS rule**
 - Includes commercial operations
 - Begins to address demand
 - Economic benefits
- **Exempts Airworthiness requirements**
 - May apply for additional exemptions, which may or may not be granted
- **Potential Areas**
 - Movie making
 - Precision agriculture
 - Surveillance of crops and livestock
 - Application of fertilizer/pesticides
 - Flare stack (oil rig) monitoring
 - Power line inspection
- **27 companies have filed Petitions for Exemption based on Section 333 (as of August 20)**

Small UAS Rule

- **Key initiative for introducing commercial UAS operations safely into the NAS**
 - Plan to release Notice of Proposed Rulemaking (NPRM) in late 2014
 - Small commercial UAS projected to be largest growth sector
 - Strategic initiative and Administrator's priority

Raphael Pirker Case

- **Background**

- Raphael Pirker fined \$10,000 for “reckless and careless” operation of a model UAS following filming at the University of Virginia, 2011

- **Legal Actions**

- National Transportation Safety Board (NTSB) judge dismissed case on March 6, 2014
- FAA appealing decision to full NTSB panel
 - Judge’s decision stayed, pending NTSB review

- **Impact**

- Increased media reports of unauthorized commercial operations and comments from operators in the media who say they plan to operate without FAA authorization

- **Response**

- Interpretive Rule issued on June 23
 - ***Restates FAA authority to take enforcement action against hazardous operations***

Interpretive Rule

- **FAA published guidance after recent incidents involving the reckless use of unmanned model aircraft near airports and involving large crowds of people**
- **FAA issued the notice to provide clear guidance to model operators on the “do’s and don’ts” of flying safely in accordance with the 2012 FAA Reauthorization Act and to answer questions regarding the scope and application of the rules**
- **Clarifies:**
 1. **Model aircraft must satisfy the criteria in the Act to qualify as model aircraft and to be exempt from future FAA rulemaking action**
 2. **Consistent with the Act, if a model aircraft operator endangers the safety of the NAS, the FAA has the authority to take enforcement action against those operators for safety violations**
- **Posted to Federal Register on June 23; public comment period produced more than 30,000 comments**

<https://www.federalregister.gov/articles/2014/06/25/2014-14948/interpretation-of-the-special-rule-for-model-aircraft>

Interpretive Rule

Outlines:

- I. Background of FAA Oversight in Model Aircraft Operations
 - AC 91-57: Model Aircraft Operation Standards
 - 2007 Federal Register Notice – Clarification of AC 91-57
- II. Requirements to Qualify as a Model Aircraft Under the FAA Modernization and Reform Act of 2012 (Pub. L. 112-95, Section 336)
 - Statutory Requirements
 - Model Aircraft Must Meet the Criteria in Section 336 to be Exempt from Future Rulemaking
- III. Scope of the FAA's Enforcement Authority
 - “nothing in this section shall be construed to limit the authority of the Administrator to pursue enforcement action against persons operating model aircraft who endanger the safety of the national airspace system.” (Pub. L. 112-95, Section 336(b))
- IV. Examples of Regulations that Apply to Model Aircraft
 - How the aircraft is operated
 - Operating rules for designated airspace
 - Special restrictions such as temporary flight restrictions (TFRs) and notices to airmen (NOTAMs)

Education, Compliance and Enforcement

- **Interpretive Rule Communication Plan**
 - Immediate Actions
 - Press release/infographic
 - Guidance for Aviation Safety Inspectors and Air Traffic Control
 - Law enforcement outreach
 - Follow-on Actions
 - Continued partnership with Academy of Model Aeronautics (AMA)
 - Establish partnerships with:
 - Other agencies
 - Manufacturers/industry

http://www.faa.gov/about/initiatives/uas/model_aircraft_operators/

Hobby / Recreational Flying
What Can I Do With My Model Aircraft?

Having fun means flying safely! Hobby or recreational flying doesn't require FAA approval but you must follow safety guidelines. Any other use requires FAA authorization.

AVOID DOING ANYTHING HAZARDOUS TO OTHER AIRPLANES OR PEOPLE AND PROPERTY ON THE GROUND.

- ✓ **DO** fly a model aircraft/UAS at the local model aircraft club
- ✓ **DO** take lessons and learn to fly safely
- ✓ **DO** contact the airport or control tower when flying within 5 miles of the airport
- ✓ **DO** fly a model aircraft for personal enjoyment


- ✗ **DON'T** fly near manned aircraft
- ✗ **DON'T** fly beyond line of sight of the operator
- ✗ **DON'T** fly an aircraft weighing more than 55 lbs unless it's certified by an aeromodelling community-based organization
- ✗ **DON'T** fly contrary to your aeromodelling community-based safety guidelines
- ✗ **DON'T** fly model aircraft for payment or commercial purposes

MODEL AIRCRAFT OPERATIONS LIMITS

According to the FAA Modernization and Reform Act of 2012 as (1) the aircraft is flown strictly for hobby or recreational use; (2) the aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization; (3) the aircraft is limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization; (4) the aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; (5) when flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower...with prior notice of the operation; and (6) the aircraft is flown within visual line of sight of the operator.

For more information about safety training and guidelines, visit www.modelaircraft.org

For more information, visit www.faa.gov/go/uas



Federal Aviation Administration

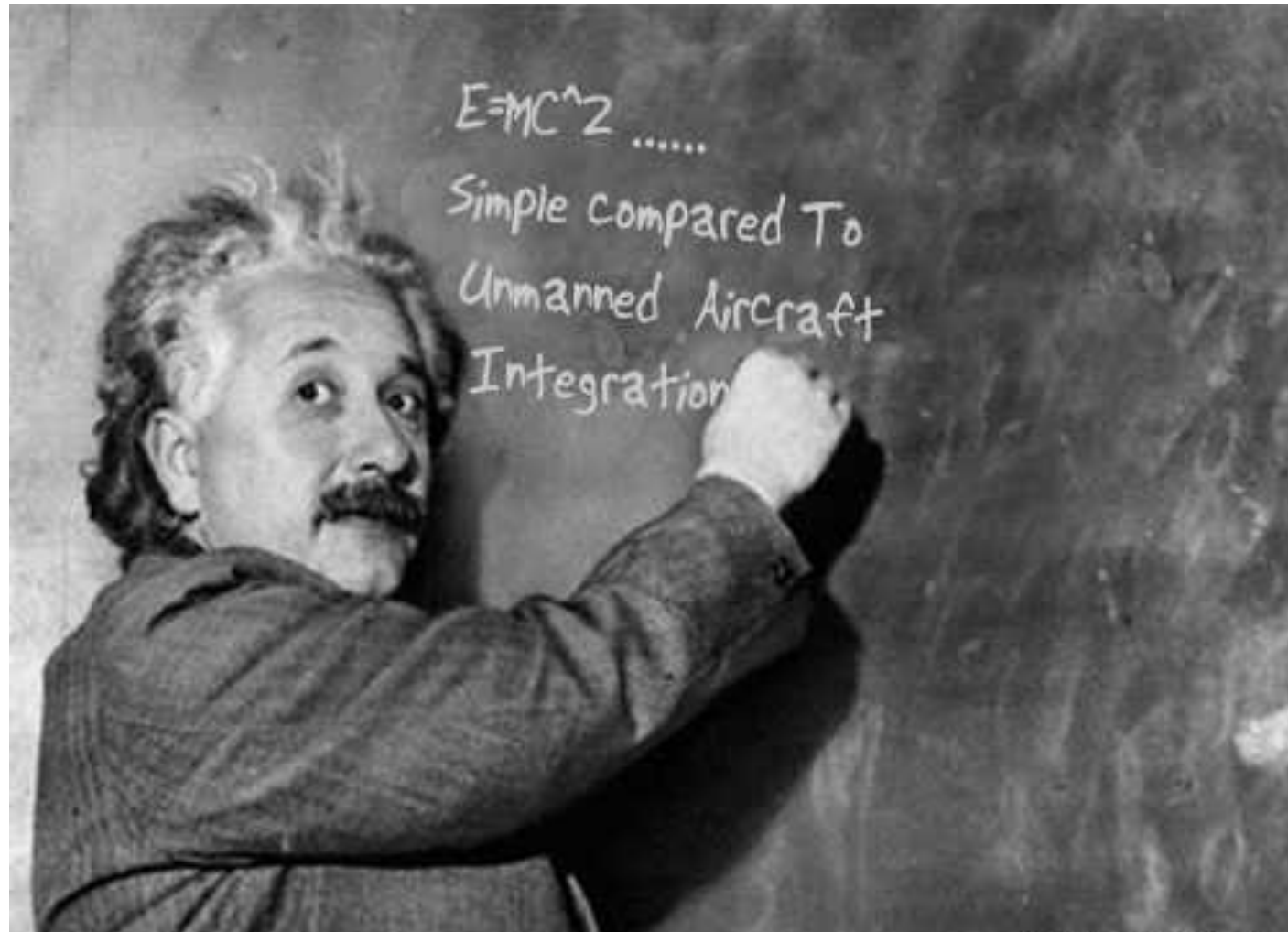
Education, Compliance and Enforcement

- **Defines authorized vs. unauthorized operations**
 - Authorized operations require: Certificate of Waiver or Authorization (COA), Airworthiness Certification, Issuance of Exemptions
 - Model Aircraft operations, as defined in Section 336(c) of the FMRA, as strictly for hobby or recreation purposes
- **Outlines actions for persons who operate:**
 - UAS in violation of the Federal Aviation Regulations (FARs)
 - Model Aircraft that endanger the safety of the NAS
- **Notice to Inspectors issued regarding how to use the Interpretive Rule (Notice 8900.268)**
- **Compliance and Enforcement Bulletin being published**

UAS Center of Excellence

- **Originally suggested in Senate committee report in FY 2012**
- **In FY 2013, FAA received several Congressional inquires**
 - FAA deferred selection process until UAS Test Site selection complete
- **Included as requirement in FY 2014 Transportation, Housing and Urban Development (THUD) conference report**
- **Selection process to start later this year and award in FY 2015**
 - Public announcement March 28, 2014
 - Public meeting held May 28, 2014
 - Final Solicitation issued August 12, 2014
 - Closing date for responses September 15, 2014

Questions?



Backup



Section 333. Special Rules for Certain Unmanned Aircraft Systems

- (a) SECTION 333 – Notwithstanding any other requirement of this subtitle, and not later than 180 days after the date of enactment of this Act, *the Secretary of Transportation shall determine if certain unmanned aircraft systems may operate safely in the national airspace system before completion of the plan and rulemaking required by section 332 of this Act or the guidance required by section 334 of this Act.*
- (b) ASSESSMENT OF UNMANNED AIRCRAFT SYSTEMS – In making the determination under subsection (a), the Secretary shall determine, at a minimum:
 - (1) *which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security*; and
 - (2) whether a certificate of waiver, certificate of authorization, or airworthiness certification under section 44704 of title 49, United States Code, is required for the operation of unmanned aircraft systems identified under paragraph (1).
- (c) REQUIREMENTS FOR SAFE OPERATION – If the Secretary determines under this section that certain unmanned aircraft systems may operate safely in the national airspace system, *the Secretary shall establish requirements for the safe operation of such aircraft systems in the national airspace system.*