

Unmanned Aerial Systems (UAS) aka “drones”

Drone



UAS/UA





UAS in Oregon

- Tasks:
 - Dept of Aviation; report to Legislature by Nov 1, 2014
 - **Status of federal regulation of UAS**
 - **Recommendation on registering private use UAS**
 - Begin registration of publicly operated UAS by Jan 2, 2016
 - Methodology
 - » Database
 - » Rulemaking
 - » Fee structure
 - Coordination/Education - public agencies/flying community
 - » State agencies; ODOT, ODF,, ODA, ODFW, Universities
 - » Law enforcement; state, counties, cities
 - » General aviation; pilots, airport managers



UAS Usage Potential

- <http://www.youtube.com/watch?v=3zE6BaFDkP4>
- Agriculture –
 - Field Evaluation for water, pesticide, fertilizer application focus,
 - Livestock counts and location.
- Forestry –
 - Fire detection/monitoring
 - Tree Disease vector location
 - Invasive species location
- Fish and Wildlife
 - Wildlife tracking and monitoring
 - Invasive Species identification
 - Law Enforcement – poaching, trespassing
- Emergency Management –
 - Search and Rescue
 - Damage Assessment identification and documentation
 - ODOT Highway/bridge assessments
- Many other potential uses



Status of Federal Regulation

- **FAA Modernization and Reform Act of 2012**
 - Directed FAA to allow UAS entry into National Airspace by September 2015
 - FAA will not make the timeline
 - DOT IG report says FAA is “not effectively managing its oversight of UAS operations”
 - Directed 6 test sites around country
 - 6 test sites include:
 - **University of Alaska, (teamed with Oregon and Hawaii/-diversity of test ranges)**
 - State of Nevada (air traffic control/intro to National Airspace System (NAS))
 - New York, Griffiss International Airport (sense and avoid/process)
 - North Dakota Department of Commerce (airworthiness and link technology)
 - Texas A&M University Corpus Christi (system safety requirements)
 - Virginia Tech University (UAS failure mode testing/risk, test sites in VA, NJ)
- **FAA Privacy policy (Sep 2013) -mission is aviation Safety, no legal authority to regulate Privacy**
 - Directs 6 test sites to have privacy policies available for public review
 - Directs other Federal Agencies to keep records and have privacy policy



Oregon Test Sites

- Tillamook Range:
 - Access to coastal maritime, mountains and
 - Long term tenant – NearSpace Corp. - balloons and UAS
- Warm Springs Range:
 - High Plains and mountainous region
 - Potential to demonstrate forest fire fighting
- Pendleton Airport Range –
 - Eastern Geographic region
 - Infrastructure in place
 - Long term interaction with GA community and Mil UAS



FAA Modernization and Reform Act of 2012 (Effective Feb 14, 2012)

Task	Congressional Deadline	Date Achieved	Comments
Simplified COA process for public agencies – within 90 days	May 2012	March 2013	FAA completed a streamlined COA process via MOUs with DOD, NASA, and DOJ in March 2013. DOI in Jan 2014
Requires FAA to designate 6 test sites within 6 months	August 2012	December 2013	Terminates after 5 years from Feb 2012.
Plan for 24 hour commercial flights in Arctic within 180 days.	August 2012	November 2012	Not fully executed by July 2014.
Comprehensive Plan for Integration of UAS into NAS within 270 days	November 2012	November 2013	Required Implementation of the plan by September 2015- Not going to make it!
Test Sites operational within 18 months of selection ; first one operational by Feb 2013	February 2013	April 2014	AK, OR, HI working w/FAA on implementation
Roadmap for integration of UAS into NAS within 1 year	February 2013	November 2013	5 year plan to be updated annually.
Rulemaking within 18 months of comp plan for integration of small UAS into NAS	August 2014	Pending	Domino effect on other UAS integration into NAS. NPRM by Nov 2014?
Rulemaking on integration of all UAS into NAS	September 2015	Pending	FAA and IG report both say FAA will miss deadline

Yellow and red indicate missed deadlines



Additional Federal Issues

- Control: very restrictive by FAA
 - Privacy, due process concerns
 - Risk of collision with piloted aircraft (sense and avoid)
 - Feds Own All Airspace - per CFR 49 U.S.C. 40103(a)(1)

- FAA soliciting UAS Center of Excellence (by 22 Sep 2014)

- FAA Legal Opinion (June 2014) – Universities and Colleges can't do research with UAS unless subject of research is directly related to the UAS. (example: subject can't be precision AG)

- Small UAS (sUAS) Coalition – Akin Gump LLP
 - Clients include Google, Amazon Prime, GOPRO (cameras)

- Section 333 of FMRA – Exceptions to Policy that has not been promulgated
 - 6 Exceptions granted to Movie Industry
 - Many more to follow – Wilbur Ellis for Big Agriculture



Recent Developments

- Pirker Decision – (Pirker V. Huerta)
 - Respondent (Raphael Pirker) fined \$10,000 for operating “drone” at UVA in October 2011 for compensation in a careless and reckless manner at 10 ft to 400 ft. <http://www.youtube.com/watch?v=OZnJeuAja-4> (see minute 1:30)
 - Court to FAA: “Policy not a substitute for any regulatory Process” -NTSB Administrative Law Judge Patrick Geraghty (March 6, 2014)
 - Game changer for FAA enforcement action against irresponsible use of recreational UAS.
 - **Reversed by NTSB Judges on November 17, 2014**
 - **Full Speed ahead for FAA enforcement for all UAS safety enforcement**

- Texas EquuSearch – Nonprofit SAR for missing persons.
 - FAA sent email to cease and desist.
 - TE filed suit and Appeals Court determined FAA has no legal consequences for rules they don’t have in effect.

- Recreational Use:
 - One page Recreational Advisory Circular from 1981 AC 91-57 still governs
 - No Flights above 400 ft.
 - Clear of airports, crowds

 - Congress to FAA in 2012 FMRA – no regulation of recreational UAS

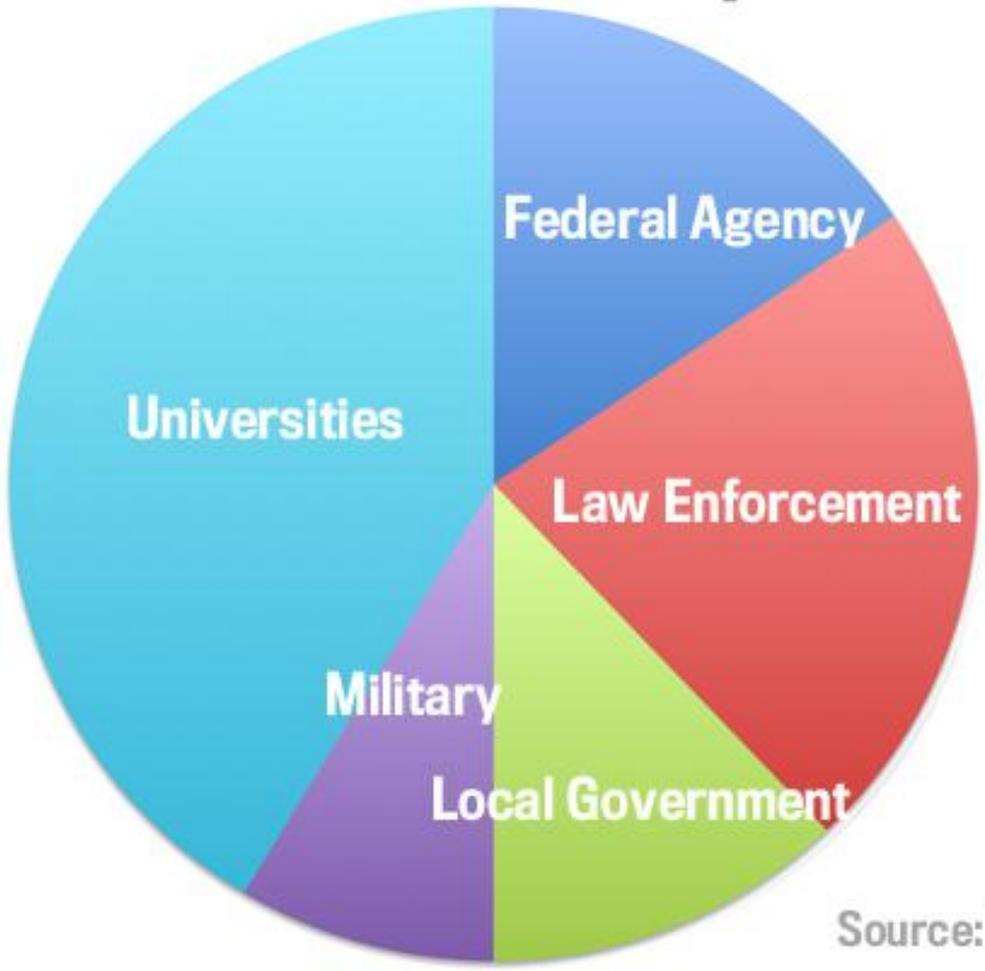
 - FAA issued “Clarification” of Model Aircraft Advisory Circular 91-57 from 1981
 - 2014 NPRM (19 pages) to “clarify” (regain control of?) authority over recreational UAS
 - New issue – No First Person View (FPV) for line of sight monitoring of a drone
 - Intent to enforce compliance (no more voluntary compliance)



Airspace for UAS?

- FAA AC 91-57 - no flights above 400 ft AGL for unmanned model aircraft
- Oregon HB-2710 – no flights below 400 ft AGL over private property
 - *United States V. Causby* – Landowners have rights to airspace
 - What are the limits? – Maintain balance - Pepperdine University Paper/Gregory McNeal
 - Operator intent?
- NASA - Project to help FAA integrate UAS into the NAS
 - Developing UAS airspace below 500 ft.
- NASA – UAS Airspace Operations Challenge (AOC)
 - Develop “sense and avoid” technology
 - Utilize ADS-B
 - System failures - Lost link, Lost GPS signal
- FAA has allowed integration into unregulated airspace in the Arctic
- FMRA Section 333 exemptions for film industry
 - 90+ others pending

Which Institutions Fly Drones?



Source: FAA via EFF

545 Active COAS as of December 2013



State Issues

- State issues:
 - House Bill 2710 regulation of UAS
 - Law enforcement/privacy protections
 - Preemption; no local laws regulating UAS
 - No weaponization
 - Civil penalties for privacy violation (below 400 ft)
 - Airspace: Federal Preemption?
 - Not applicable to recreational UAS
 - Registration of public use UAS
 - Concern by ACLU about state agency sharing of UAS imagery with other entities
 - **Cottage Industry already exists in Oregon!**
 - Private enterprises using recreational/commercial UAS
 - Real estate, agriculture, sporting events, inspections etc.
 - Camera mounted (gyro stabilized)
 - Available at any hobby store or on the internet
 - Increasing number of incidents with manned aircraft
 - Registration challenges: “chasing bees” vice “access to the hives”



Should We Register Private Use Drones?

- Three classes of UAS
 - Public use – register by January 2016
 - Private Use/Commercial
 - Private Use/Recreational
- Two federally designated weight classes
 - Over 55 pounds – Heavy
 - Under 55 pounds – light
- Three options
 1. Register all three classes of drones
 2. Register only public and commercial
 3. Register all three classes but wait for federal legislation and litigation to sort out.
- Recommendation
 - Recommend option 3



Why Option Three ?

- Still Provides identification and accountability
- Rapid changes in immature federal law and litigation
 - Still pending regulation of small UAS by FAA
 - Still no streamlined Public use UAS as directed by Congress.
 - No commercial UAS authorized
 - except for FAA 333 exceptions
 - Could be 16 months before commercial operations authorized
 - Recreational UAS to get increased FAA scrutiny for safety
 - Oregon at forefront of privacy and due process legislation in 50 states
 - Concern that UAS industry goes elsewhere in competitive environment
 - Over 200 UAS companies in Oregon
 - Multimillion dollar industry in Oregon
- Buys time for technology and industry to develop
- Recommend Working Group to stay on top of UAS issues
 - Law enforcement
 - ACLU/civil liberties groups
 - Industry
 - State agencies
 - Legislators/Executive Branch



How to Register?

– Methodology

- Database
 - Existing Database for manned aircraft
 - Modifications or develop new database?
- Rulemaking – to be developed
- Notional fee structure

Type UAS	registration cost	number	revenue estimates
Recreational	15	2000	\$ 30,000
Public Use	200	50	\$ 10,000
Commercial	200	1000	\$ 200,000
Heavy >55 lbs.	300	150	\$ 45,000
Total revenue			\$ 285,000

- Administrative Costs
 - 1-2 FTE depending on numbers - \$122k per FTE
 - Database change/upgrade - \$10k-\$60k
 - Education and Outreach - \$50k - \$100k Total \$282K (1 FTE)

Questions?

