Unmanned Aerial Systems (UAS) aka “drones”
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](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)*

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

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](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?

- Federal Agency
- Universities
- Law Enforcement
- Military
- Local Government

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

<table>
<thead>
<tr>
<th>Type UAS</th>
<th>registration cost</th>
<th>number</th>
<th>revenue estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreational</td>
<td>15</td>
<td>2000</td>
<td>$</td>
</tr>
<tr>
<td>Public Use</td>
<td>200</td>
<td>50</td>
<td>$</td>
</tr>
<tr>
<td>Commercial</td>
<td>200</td>
<td>1000</td>
<td>$</td>
</tr>
<tr>
<td>Heavy &gt;55 lbs.</td>
<td>300</td>
<td>150</td>
<td>$</td>
</tr>
<tr>
<td>Total revenue</td>
<td></td>
<td></td>
<td>$</td>
</tr>
</tbody>
</table>

- 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?