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Preliminary Word

- This presentation provides information about the law. Legal information is not the same as legal advice, which involves the application of law to an individual's specific circumstances. The interpretation and application of the law to an individual's specific circumstance depends on many factors. This presentation is not intended to provide legal advice.
- The information provided in this presentation is drawn entirely from public information. The views expressed in this presentation are the authors' alone and not those of the authors' clients.

Background on FAA Treatment of Drones

- Current Restrictions – Commercial vs. Hobbyists
- 2012 FAA Reform Act
- Interim relief (agriculture, pipelines/power lines, film, flare stacks)
- Required Rulemaking
- Future Issues
- Enforcement
- Recent Waivers
Terminology

- Drone
- UAV – Unmanned Aerial Vehicle
- UAS – Unmanned Aircraft System
  - sUAS – Small UAS
- UVS – Unmanned Vehicle System
- Model or R/C Aircraft

Types of Drones

Commercial vs. Hobbyists

- Hobbyists
  - Previously not well defined
  - Operations Restricted
    - Under 400 feet
    - Line of sight
    - Away from airports
    - Less than 55 lbs.
- Private, internal use by a company is not hobby use
Energy Industry Uses

- Visual inspections – HD, thermal, multispectral, corona
  - Electric transmission and distribution lines
  - Power plants/substations
  - Natural gas transmission and distribution pipelines
  - Storage facilities and valves
- Surveying - LiDAR

Energy Industry Uses

- Gas leak detection
- Supply delivery
- Communications repeaters
- Wire stringing?

Benefits to Energy Industry

- Safety
  - Distance from equipment
  - Reduced fall hazard
  - Compare to conventional aircraft
- Lower cost
  - Fuel costs
  - Operating costs
  - Aircraft costs
Benefits to Energy Industry

- Speed/Versatility
- Environmentally friendly
  - Fuel consumption
  - Avoid impact to environmentally sensitive areas
  - Quiet

FAA Authorizations

- Certificate of Waiver/Authorization
  - Arctic circle approved June 2014
- Special Airworthiness Certificate
  - Experimental Class
  - San Diego Gas & Electric approved July 2014
- Section 333 Exemptions
  - No longer used

2012 FAA Reform Act

- By September 30, 2015, FAA must adopt plan to safely accelerate the integration of civil drones into national airspace
- 18 Months after plan submitted - FAA must adopt rules allowing for civil operation of drones in the national airspace system
- FAA Roadmap
### FAA Test Beds

- University of Alaska - State monitoring, navigation, safety standards.
- State of Nevada - Operator standards and certification requirements, air traffic control procedures.
- New York’s Griffiss International Airport - Sense and avoid capabilities, integrating UAS into congested airspace.
- North Dakota Department of Commerce - Airworthiness, and high reliability link technology.
- Texas A&M University – Corpus Christi - System safety requirements.
- Virginia Polytechnic Institute and State University (Virginia Tech) - Failure mode testing and identify and evaluate operational and technical risks areas.

### Section 333

- Section 333 Exemptions
- June 2014 – FAA began considering Exemptions
- Targeted Four Applications
  - Film Industry
  - Precision agriculture
  - Power line and pipeline inspection
  - Oil and gas flare stack inspection

### Section 333

- September 2014 – FAA began granting Section 333 Exemptions
  - Thousands eventually granted
First 1,000 Exemptions

FAA Part 107

- June 2016 – FAA Adopts Part 107 Rules
  - Less than 55 lbs.
  - Visual line of sight
  - Daylight/twilight operations
  - 400 foot AGL, or 400 foot above structure if within 400 feet horizontally
  - Max speed 100 mph

- No flight over people not involved in operation
  - Unless under covered structure or inside stationary vehicle
- Register aircraft
- Fly in class G airspace
  - Procedure for obtaining authorization in other classes
- Waivers available
FAA Part 107

- Pilot must hold remote airman certificate with small UAS rating
  - Or be under supervision of certificate holder
  - Must be 16
  - Must pass knowledge exam
  - Current pilots can take online course

Section 2209 Restrictions

- 2016 Act required FAA to adopt procedures to prohibit or restrict UAV flights near certain facilities:
  - Critical infrastructure, such as energy production, transmission, and distribution facilities and equipment.
  - Oil refineries and chemical facilities.
  - Amusement parks.
  - Other locations that warrant such restrictions.

Section 2209 Restrictions

- FAA yet to adopt procedures
- No self-help allowed
  - Drones considered aircraft
FAA Drone Waivers

- Fly a UAS from a moving aircraft or a vehicle in populated areas (§ 107.25)
- Fly a UAS at night (§ 107.29)
- Fly a UAS beyond your ability to clearly determine its orientation with unaided vision (§ 107.31)
- Use a visual observer without following all visual observer requirements (§ 107.33)
- Fly multiple UAS with only 1 remote pilot (§ 107.35)
- Fly a UAS without having to give way to other aircraft (§ 107.37(a))
- Fly a UAS over a person/people (§ 107.39)

FAA Drone Waivers

- Fly a UAS:
  - Over 100 miles per hour groundspeed
  - Over 400 feet above ground level (AGL)
  - With less than 3 statute miles of visibility
  - Within 500 feet vertically or 2000 feet horizontally from clouds
- § 107.51

Future Issues

- Spectrum
- Privacy
- Data Management
FCC/Spectrum Issues

- 5G will utilize low, mid, and high-band spectrum
- Interesting Spectrum Proceedings
  - Low-band – service to be deployed post incentive auction
    - Citizens Broadband Radio Service (CBRS)
      - Original 50 MHz between 3 and 3.7 GHz
      - New from 3.5 GHz to 3.7 GHz
    - National Security/military
    - Safety/First Responder
    - Priority Access Licensee (PAL)
    - General Authorized Access (GAA)
      - Current: 50 MHz between 3.65 and 3.7 GHz
        - Now from 3.55 GHz to 3.7 GHz
      - Tiered services
        - Incumbent Access Tier
        - Priority Access Licensee (PAL)
        - General Authorized Access (GAA)
    - Current Operations
      - Cutoff date – sites registered in ULS prior to April 2015 entitled to grandfathered protection through at least April 2020
      - New sites registered within existing footprint after April 2015 protected
      - New sites registered outside of zones after April 2015 not afforded any interference protection
    - FCC recently made additional changes to the priority tier (October 2018)
      - Licensed Areas: licensed by county instead of census tract (about 3,000)
      - Term: 15-year license term with 10-year renewability
    - Next Steps – Two Key Benchmarks
      - Auctions for Priority Licenses
        - GAA tier could be available Q4 2019

- 6 GHz Band
  - Background
    - There has been a lot of recent action in the 4 GHz and 6 GHz bands in the past few years
    - FCC NOI asking about current use of 6 GHz band (August 2017)
    - FCC proposed to open band for unlicensed use (October 2018)
  - Current Operations
    - Fixed services – point-to-point for backhaul
    - Broadcasters – use sliver of the band for over-the-air broadcast
  - Unlicensed Supporters
    - Include tech companies like Apple, Facebook, Hewlett Packard, and Microsoft
  - Fixed Service Supporters
    - Include large industrial companies that are ENTLELEC members
    - Argue that interference with unlicensed users is inevitable
  - FCC’s Next Steps
    - Voted on NPRM in the Spring that would allow unlicensed devices to operate in areas where they would not cause harmful interference to the licensed services and would protect incumbent fixed operators
  - High Band
    - Auctions
      - Auction 103: 37 GHz, 39 GHz, and 47 GHz (December 2019)
      - Auction 102: 24 GHz (Spring 2019)
    - Millimeter Wave Proceeding
      - Exploring options above 95 GHz for lightly-licensed, unlicensed and experimental uses

Future Issues

- Operational Issues
  - BVLOS
  - Night flights
  - Use in commerce
Enforcement

- October 6, 2015 FAA proposed $1.9MM fine against SkyPan International
  - 65 unauthorized flights
  - Aircraft lacked airworthiness certificate and SkyPan did not have COA
- Settled for $200,000

Questions/Discussion

Thank you!