



Proposed Rules for Unmanned Aircraft: What You Need to Know Now

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Presented By



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BVLOS Rule - Background

- October 2006 – First UAS gets an airworthiness certificate (General Atomics Altair)
- October 2008 – Congress recommends DOD and FAA form a committee to examine UAS operations and aircraft deconfliction
- February 2013 – 6 UAS test centers proposed
- September 2014 – First 333 exemptions granted
- February 2015 – Part 107 NPRM
- August 2016 – Part 107 Final Rule Goes into Effect (18 months)

BVLOS Rule - Background

- December 2019 - Remote ID NPRM
- February 2021 – Flight over people NPRM
- January 2021 – Flight over people final rule (12 months)
- January 2021 – Remote ID final rule (25 months)
- June 2021 - BVLOS ARC formed
- March 2022 - BVLOS ARC Final report
- August 2024 – BVLOS NPRM (3 years)

Rulemaking Process

- The FAA has issued a Notice of Proposed Rulemaking (NPRM)
- The NPRM is governed by the Administrative Procedures Act (APA)
- APA requires all major rulemaking have a notice and comment period to take the views of the public
- The comment period is open until midnight, October 6, 2025
- FAA is required to consider all comments
- Based on the comments, the FAA can issue the rule, make revisions and issue the rule, or withdraw the rule and start over

Creation of Part 108

- Routine operations
- Scalable
- Flexible to accommodate new technology
- Involvement of the TSA to ensure consistency between manned and unmanned security

Creation of Part 108 – Risk Based Approach

“Research conducted by MITRE for FAA found that in Class G airspace, a drone with no mitigations could be expected to collide with manned aircraft between once every 10,000 flight hours in the most heavily used Class G airspace, to once every 1 million flight hours in the least used Class G airspace. The addition of mitigations under part 108, such as those described above, would substantially lower the collision risk in Class G airspace even further.”

Package Delivery – Current Structure

- Part 121 or Part 135 Air Carrier Certificate
- Same as for manned aircraft with limited exemptions to accommodate regulations regarding documents on aircraft and crew issues
- Economic Authority from DOT
- Requirement that the carrier be a US Company
- Operation of Certificated Aircraft the goal, but current operations primarily under airworthiness waivers/exemptions

Part 108 Operators – Proposed Structure

- FAA intends for current waiver or exemption holders to transition to Part 108
- More extensive oversight and inspection than Part 107
- Includes rest and duty rules for personnel
- Have manufacturers operations and maintenance manual
- Aircraft limitations such as speed, weight and weather depend on the aircraft's approvals
- Operations must be conducted from pre-designated access-controlled areas segregated from non-flight participants
- All aircraft must be controlled from within the US

Part 108 Operators – Proposed Structure

- Company Operations Manual
 - Define all personnel and their duties
 - Preflight procedures
 - UA weight and balance procedures
 - Accident Notification procedures
 - UA communication procedures
 - Recordkeeping compliance
 - Access procedures to UA for inspection and maintenance
 - Emergence procedures
 - Hazmat if necessary

Part 108 Operators – Proposed Structure

- Apply for Part 108 approval using a UA with an Airworthiness Acceptance
- No carriage of persons
- Two levels of authority, Permit and Certificate
 - Permit
 - Package delivery, agriculture, aerial surveying, civic interest, unmanned aircraft operations training, demonstration, recreational, flight testing
 - Permit application must have base of operations, type of operations, area of operations, company manuals, recordkeeping processes, reporting procedures, type of UAS to be used
 - Conducting Operations in a new area will require an additional “mini” application and approval process
 - Operations plan must “minimize risk to persons and property on the ground”
 - Good for 2 years

Part 108 Operators – Permit Package Delivery

- Must have a Hazmat program
- Must provide information about the delivery method to each customer and provide the customer instructions to remain clear of the unmanned aircraft during
- Must ensure proposed delivery areas are free of any obstructions that could pose a hazard.
- Must be conducted with fewer than 100 active unmanned aircraft, including those directly under the control of the operator, or conducted through lease agreements with other persons, subcontractors, or subsidiaries.
- Maximum total take-off weight of 55 pounds
- Limited to Category 3 density or lower
- TSA Security program

Part 108 – Permit Agricultural Operations

- Must be conducted with fewer than 10 active unmanned aircraft
- Maximum Weight of 1,320 pounds
- Limited to Category 1 population density areas unless otherwise authorized by the administrator
- Comprehensive training program that is tailored for their proposed operation
- Operators must ensure that all operations personnel have satisfactorily completed the operators training program

Part 108 Operators – Permit - Other

- Aerial Surveying
 - Maximum 25 aircraft
 - Maximum weight 100 pounds
 - Category 3 or lower density
- Civic Interest Operations (forest/wildlife conservation, public safety)
 - Maximum 25 aircraft
 - Maximum weight 100 pounds
 - Category 3 or lower density
 - Conducted for a state/local/tribal government

Part 108 Operators – Certificated

- Can be used for:
 - Package delivery
 - Agriculture
 - Aerial surveying
 - Civic interest
- Application similar as permit, but more documentation needed and required to also have:
 - SMS system
 - Procedures for permitting use of inoperative equipment (similar to MEL)
 - Does not expire, non-transferrable

Certificated Operations

- Package Delivery
 - Generally same as permitted, but maximum take-off weight 110 pounds
 - No limitation on number of aircraft
 - Not limited to a specific density beyond requirement that the delivery area be free of obstructions
- Agriculture
 - No weight limit
 - No limit on number of aircraft
 - Still limited to Category 3 density
- Aerial Surveying and Civic Interest
 - Weight limit 110 pounds and Category 4 density

Personnel

- Does not require an Airman Certificate
- Manned aircraft require the pilot to be in sole charge of the safety of the flight
- Proposed BVLOS flights rely more heavily on automation
- Unlike Part 107, Part 108 focuses more on control and supervision at the corporate level (similar to certificated air carriers)
- Personnel records must be maintained including each persons position and duties and whether the person was fired for cause
- Training and proficiency recordkeeping requirements
- Personnel records must be kept for 12 months after the person leaves the employment

Personnel

- Company required to have an operations supervisor (similar to responsible officer) who is the ultimate authority for ensuring compliance
- “The operations supervisor, as required under § 108.305, is directly responsible for, and is the final authority as to, the safe and secure operation of all unmanned aircraft under their purview and ensuring that the operator complies with all applicable regulatory requirements and the company operations manual, as required under § 108.135.”
- Company can establish and document specific positions suitable for the work in the Operations manual (Operations Supervisor, Flight Coordinator, Maintenance, Ground Handling, etc.)
- The Aircraft’s manufacturer may require certain positions as a condition of the approval of the Aircraft, such as a flight coordinator

Personnel – Qualifications and Training

- Training dependent on the actual work performed and can include:
 - Regulations, Airspace classification, operating requirements, and flight restrictions affecting unmanned aircraft operations
 - Aviation weather sources
 - Crew resource management; Communication procedures; Safe distance criteria
 - Principles of strategic deconfliction and conformance monitoring.
 - Drugs and alcohol; Aeronautical decision-making and judgment, etc.
- 108.315 has a complete list
- No medical certificate, certification has no condition that would interfere with duties

Airspace

- Segregated airspace remains a key element to safety
- Most BVLOS operations to occur below 400' unless in class G airspace and no more than 400' over a structure
- Aircraft must be capable of making way for aircraft equipped with ADS-B Out
- Aircraft not allowed to broadcast ADS-B or a transponder signal without authorization from Administrator
- Preflight requirements including weather, airspace, TFRs, population density, weight/balance, cargo properly secured

Airspace

- Must be able to yield the right of way to:
 - Aircraft arriving or departing an airport or heliport
 - Aircraft using ADS-B Out or transponder
 - While yielding right of way, the UAS cannot pass over, under or ahead unless at a safe distance
 - Safe distance will be determined using a means acceptable to the administrator

Controlled Airspace

- Controlled airspace access is currently granted on a “case-by-case basis”
- FAA will carve out higher risk areas of controlled airspace where prior approval will be needed
- For other areas, access is permitted if:
 - You use an approved method for strategic deconfliction and conformance monitoring (unexpected action by aircraft)
 - You can detect and avoid an aircraft that is not broadcasting its location
- 3rd party service providers anticipated to supply some means of compliance

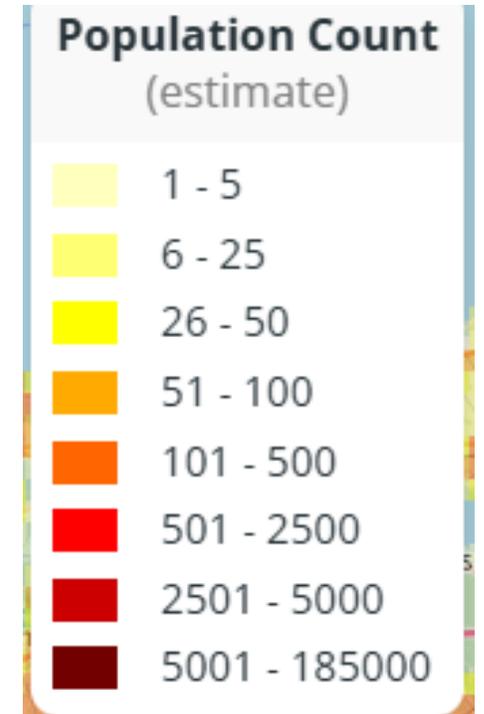
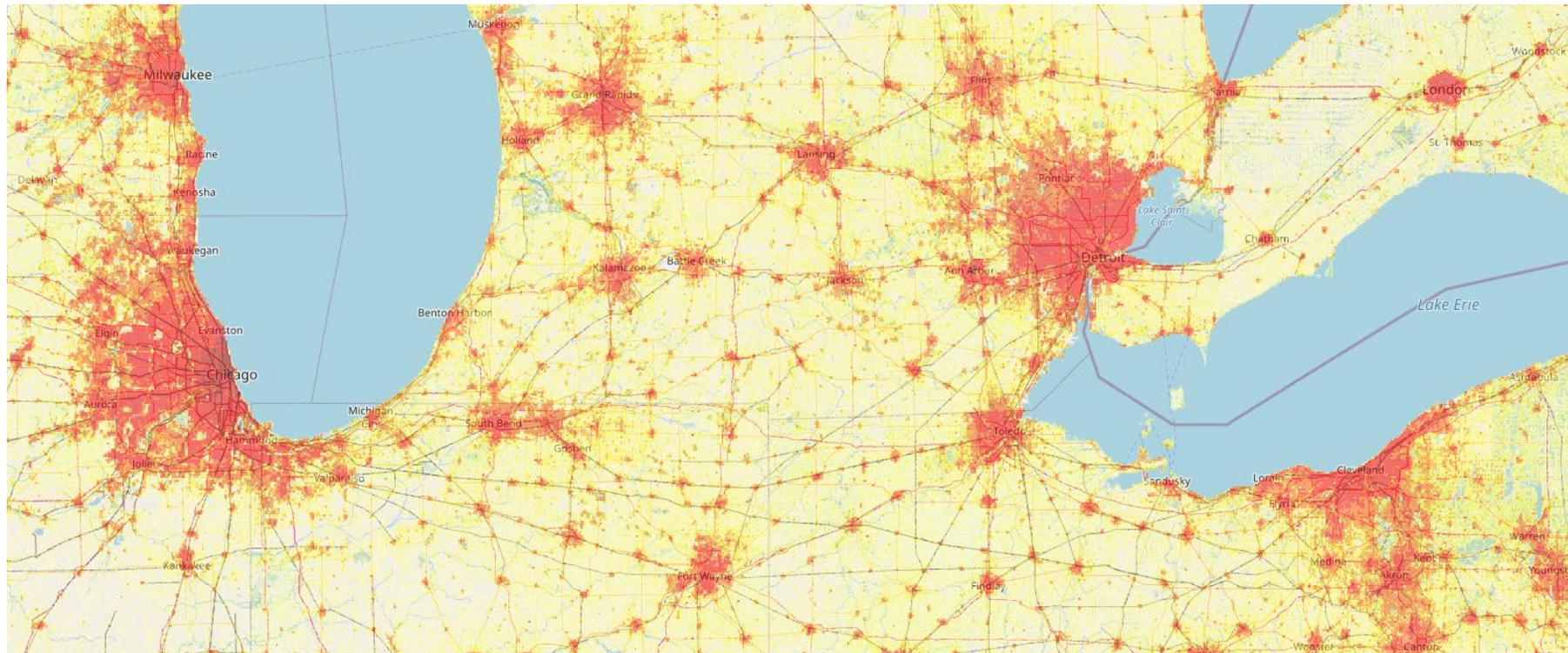
Operation Over People

- Flight over open-air assembly of people generally prohibited
- Creation of 5 operating categories based on population density:
 - Category 1: Farther than 1 statute mile from any cell of 10 people or higher.
 - Keep 50 feet from persons
 - Category 2: Within 1 statute mile of a cell of 10 people or higher
 - Limitations on command and control frequencies
 - Category 3: Within 1 statute mile of a cell of 25 people or higher
 - Cat 2 + Must have an AMOC for strategic deconfliction

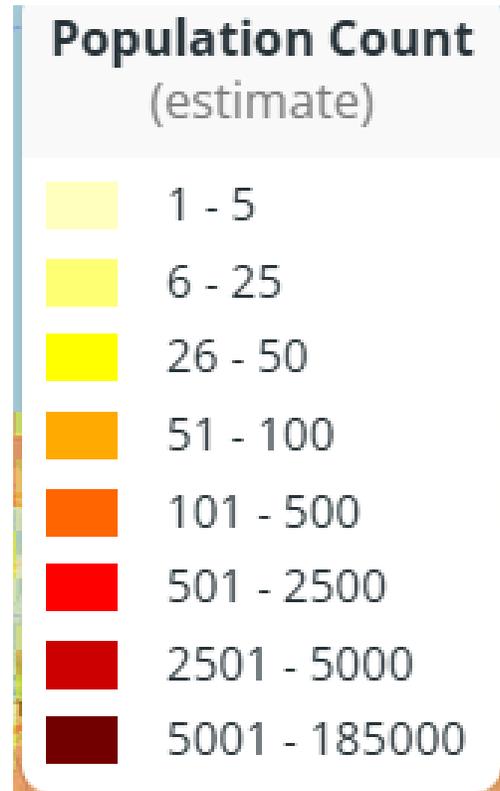
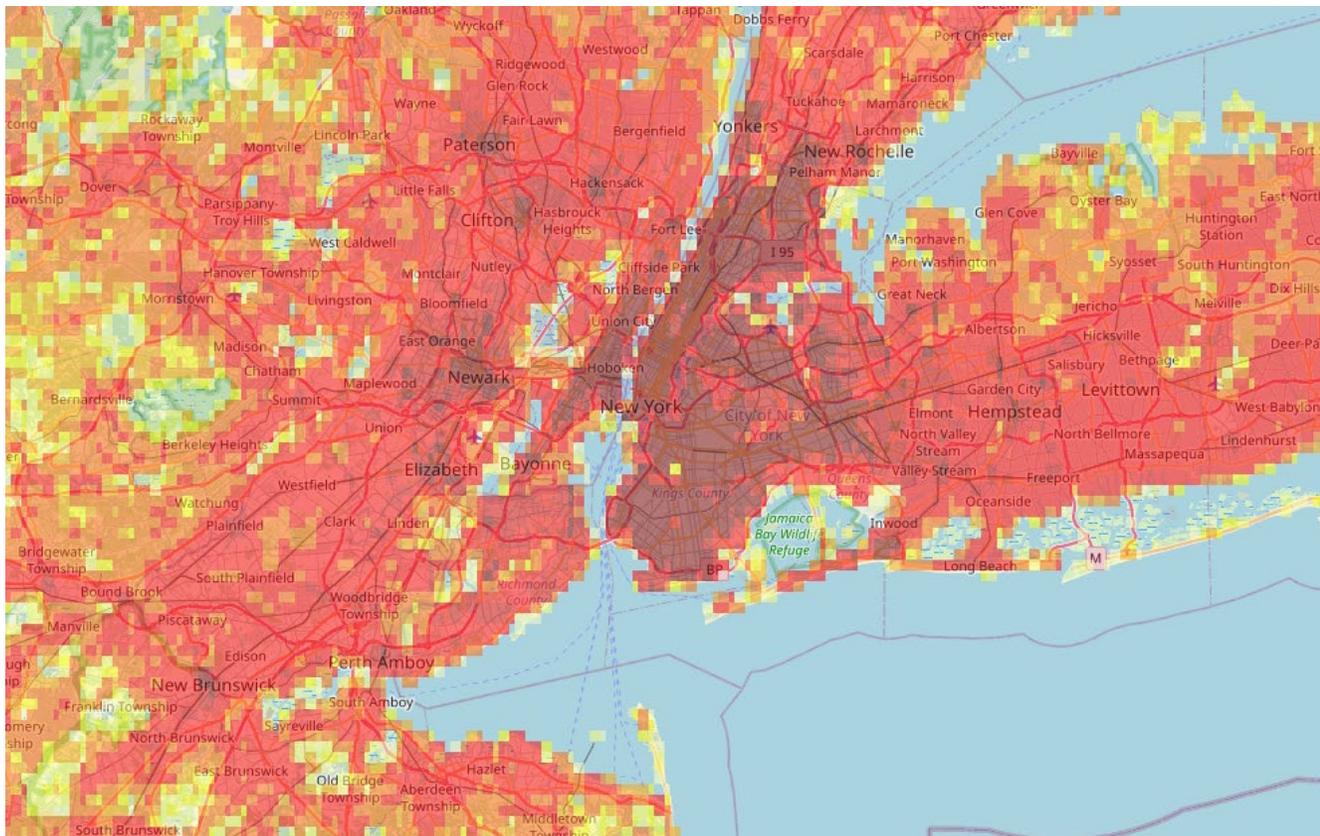
Operation Over People

- Category 4: Within 0.5 statute miles of a cell of 100 people or higher
 - Cat 3+ Hold an Operating Certificate under Subpart E
- Category 5: Within 0.5 statute miles of a cell of 2,500 people or higher
 - Cat 4+ Ensure the ability to detect and avoid an aircraft that it not broadcasting its location
- Uses Oak Ridge National Laboratory's LandScan USA Population Data as set on August 1 of each year

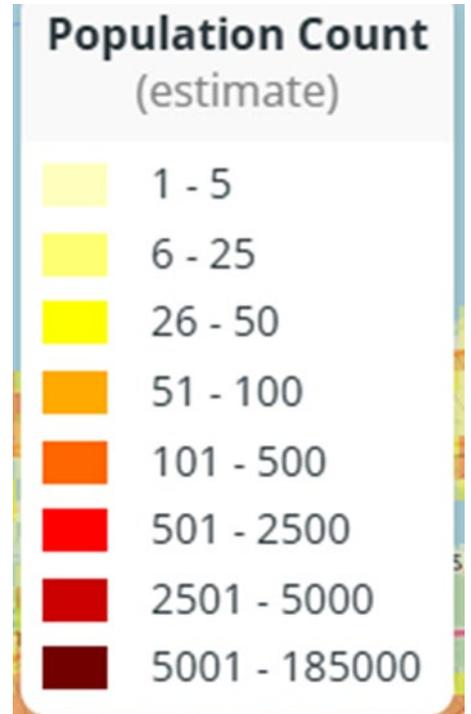
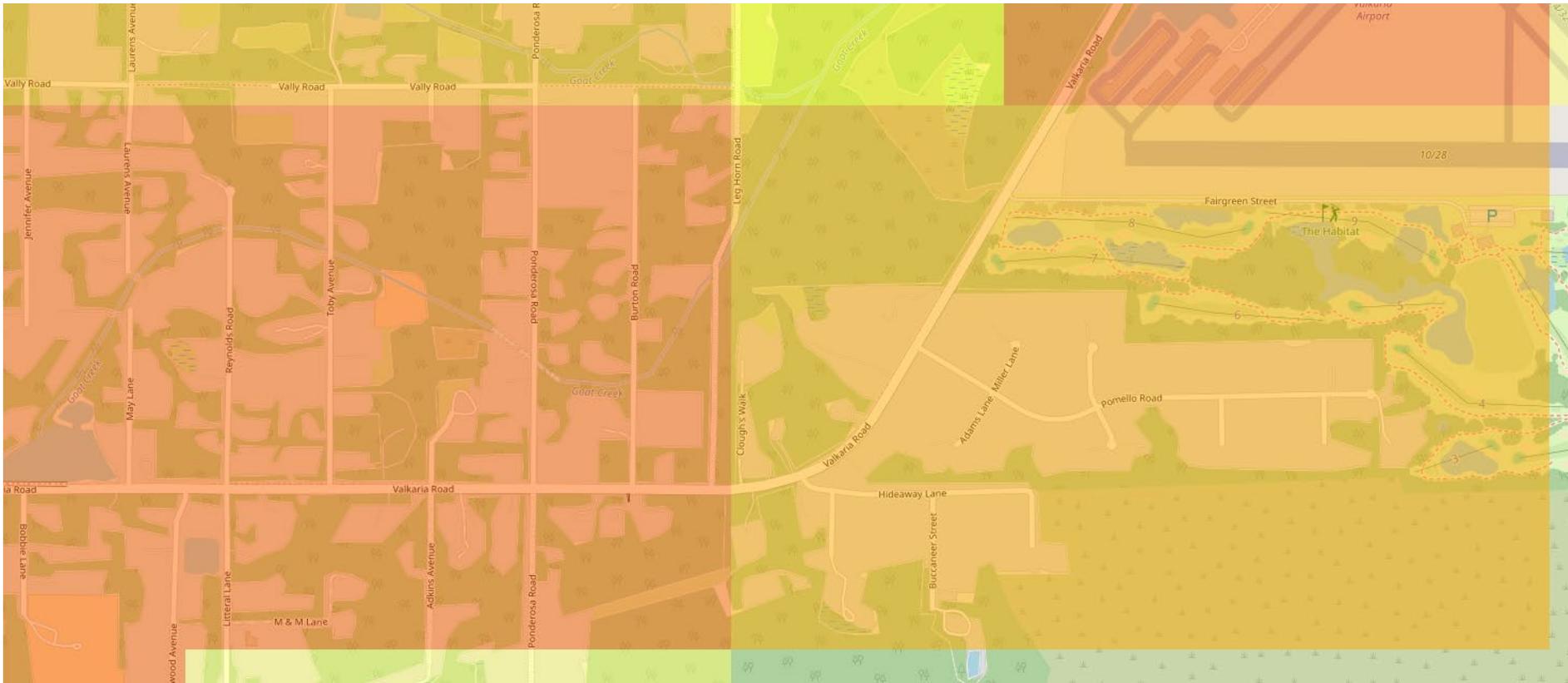
Operation Over People



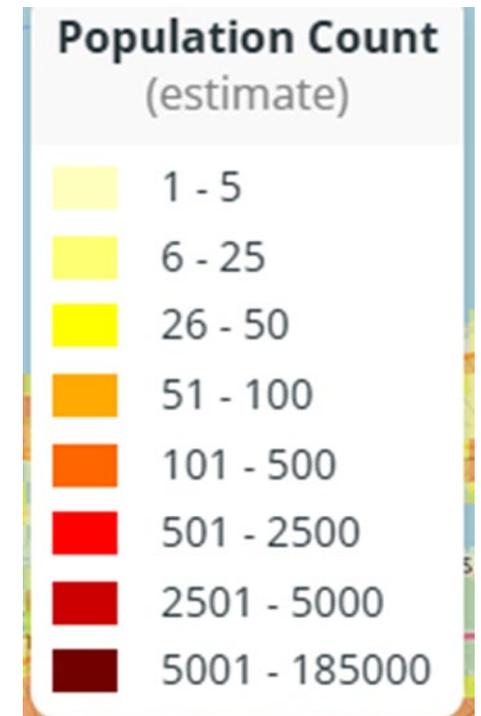
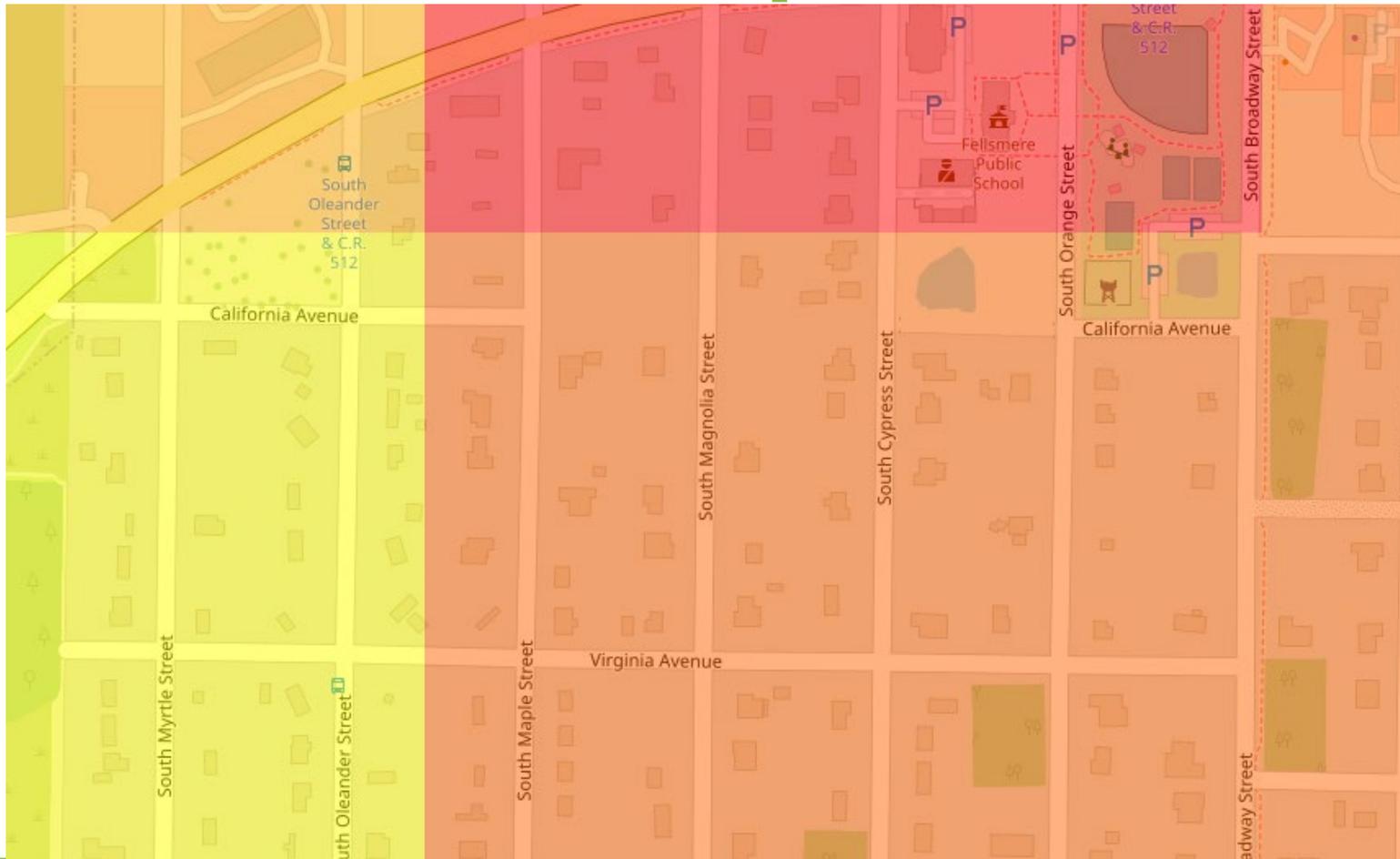
Operation Over People



Operations Over People



Operations Over People



Strategic Deconfliction/Conformance

- Preflight – ability to input light path and times and compare it with flight paths and times to determine overlap
- Adjust flight paths/times to “deconflict” with the other aircraft
- Ongoing deconfliction information during flight
- Service provider monitors actual flight with intended flight to determine conformance with the original flight plan
- Notification of non-conformance helps with situational awareness
- Alerts and conformance data is available to FAA
- FAA considered universal requirement but ultimately limited it to category 3 density

Airworthiness

- Type Certificate and Manufacturing Certificate for manned aircraft is replaced with an “Airworthiness Acceptance” framework
- Risk is assessed as greater than Part 107, but less than operations using a Special Airworthiness Certificate
- Airworthiness Acceptance for Part 108 is limited to:
 - Maximum wing or lateral span of 25 feet
 - Total maximum take-off weight of 1,320 pounds including payload/cargo
 - Maximum speed of 87 knots ground speed

Maintenance and Airworthiness

- No new requirements for certification of maintenance personnel
- Administrator has determined that no airworthiness certification is required
- Airworthiness Acceptance will include noise requirements
- Aircraft inspection and maintenance records requirements, description of work performed, person performing work, return to service approval
- The practical limits on what you can do under Part 108 will be determined by the limitations placed on the UA as part of its Airworthiness Acceptance

Airworthiness

- Manufacturer required to support continued airworthiness and operational safety requirements
- Documented compliance with requirements for design, testing, production, noise, cybersecurity
- Document that aircraft conforms to design requirements
- Must monitor and correct safety of flight issues through the issuance of safety bulletins
- Unrestricted access to facilities and documents by administrator
- Approval for all design changes

Multiple UAS Operations

- Default is 1:1 operator to UAS
- Higher ratio can be used based on ability to handle abnormal or emergency conditions using a means acceptable to the administrator
- Manufacturer of Aircraft and control systems must be approved for multiple UAS operations

Data Reporting Requirements

- Total number of flight hours for each UA (make/model/SN/Reg. No.)
- Reliability data for each aircraft
 - Altitude
 - Speed
 - Location
 - Incidents anomalies
 - All unplanned and precautionary landings
 - Diversions
 - Detailed Service Difficulty Reports for certificated operators
- Operators must report all discrepancies to the Part 146 data service provider
- All cybersecurity incidents and security breaches and corrective actions

Cybersecurity

- NPRM relies on highly networked data infrastructure
- Requirement for operators to maintain cybersecurity over their equipment and operations:
 - Protecting software, hardware, and network computing infrastructure necessary to protect operations from unauthorized access;
 - Ensuring the operator's employee network access privileges are limited to those necessary to fulfill normal job duties;
 - Preparing for, responding to, and mitigating the impact of cyber-attacks; and
 - Ensuring access privileges are turned off and removed for former employees.

Part 146 – Automated Data Services

- FAA has authority to regulate “Air Agencies” such as repair stations and aviation flight schools
- FAA will consider 3rd party data providers to be “Air Agencies” and will regulate them directly
- Includes 3rd party service providers and UTM service providers
 - Strategic Coordination for UA
 - Avoid flight into terrain
 - Aid with Detect and Avoid
 - Avoidance maneuvering
- Operators can be their own ADS supplier if they meet the requirements
- FAA Air Traffic Organization and LAANC unaffected by the rule

UTM and 3rd Party Services

- FAA anticipates UTM to be handled primarily by 3rd parties
- FAA will be responsible for approving and overseeing service providers
- Approval of systems will be through industry consensus standards that demonstrate an acceptable means of compliance

Objections to the Rule

- There have already been some objections filed to the NPRM
- Helicopter and agricultural operators concerned with operations below 400'
- Inadequacy of ADB-B and TCAS at low altitude, particularly in urban areas
- Pilot workload and difficulty of performing see and avoid with a small target
- Desire for UAS on-board detect and avoid
- Desire for protected helicopter and agricultural corridors or zones
- Higher design and maintenance standards

Miscellaneous

- 108.15 - “No person may assault, threaten, intimidate, or interfere with the operations personnel of an unmanned aircraft in the performance of their duties related to unmanned aircraft operations.” (No self-help C-UAS)
- All aircraft must have Remote-ID
- Part 108 Aircraft must be registered under Part 47 (N-number) and not the streamlined part 48 registration system. This will also allow the filing of security interest in UAs

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